JULY 3, 1954 PAGES 1 TO 50

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2
Telegrams: LANCET, RAND, LONDON Telephone: TEMPLE BAR 7228 and 7229

No. I OF VOL. II, 1954
No. 6827 VOL. CCLXVII
LONDON, SATURDAY, JULY 3, 1954
Founded 1823 PUBLISHED WEEKLY Registered as a Newspaper
Pp. 104—Price 1s.
Annual Subscription: £2 2s.

'ENTACYL' TRADE MARK

Tablets containing piperazine adipate 300 mg.
Brit. Pat. Appn. No. 29133/53

A new treatment with rapid, effective action in threadworm infestation

DOSAGE: Up to six years - 1 tablet per day per year of life. Over six years of age - 2 tablets three times a day. This daily dosage should be administered for seven days.

Basic N.H.S. price:
Bottles of 25 at 3/- and 100 at 10/-.

Descriptive literature and specimen packings are available on request

THE BRITISH DRUG HOUSES LTD. (Medical Department) LONDON N.1

OXFORD MEDICAL PUBLICATIONS

SEE PAGE 2

Second Edition

ABDOMINAL OPERATIONS
By RODNEY MAINGOT, F.R.C.S.
Surgeon, Royal Free Hospital

2nd Edition in one volume Pp. 1274 1051 Illustrations including 16 Colour Plates £6 6s. net

H. K. Lewis & Co. Ltd., 136, Gower-street, W.C.1

New Revised Edition

ENDOCRINE DISORDERS IN CHILDHOOD AND ADOLESCENCE
By H. S. LE MARQUAND, M.D., F.R.C.P., F. H. W. TOZER, M.D., M.R.C.P., and W. J. TINDALL, M.D.

Completely rewritten to conform with current trends in Endocrinology and based on the personal observation and treatment of patients during the last twenty years.

367 pages 90 photographic plates 32s. 6d. net

English Universities Press Ltd., Warwick-square, E.C.4

CAREERS IN MEDICINE
Edited by P. O. WILLIAMS, M.A. (Cantab.), M.B., B.Chir., M.R.C.P.

With contributions from 49 eminent medical authorities

Cr. 8vo 292 pages Price 15s. net, plus 8d. postage

This book outlines the particular qualities of mind, the type and amount of specialised training, required in each branch of the Medical Profession.

"... it should be in the hands of everyone who has to advise medical students, and certainly should be consulted by every newly-qualified doctor."—*The Practitioner.*

Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4

BRITISH MEDICAL BULLETIN

Vol. 10, No. 1 REACTIONS TO INJURY January 1954
Introduction: Sir Edward Mellanby. *Scientific Editor:* W. G. Spector

Vol. 10, No. 2 TUBERCULOSIS May 1954
Introduction: P. M. D'Arcy Hart. *Scientific Editor:* J. G. Scadding

Vol. 10, No. 3 CHROMATOGRAPHY September 1954
Introduction: A. J. P. Martin. *Scientific Editor:* C. E. Dent

Price 15s. per number £2 per volume of 3 numbers

Medical Dept., The British Council, 65, Davies-street, London, W.1

DISABILITIES
AND HOW TO LIVE WITH THEM
by 55 Patients

Demy 8vo 252 pages Price 10s. 6d. net, plus 6d. postage

"... it is because these essays remind us so vividly of suffering man that the book has an especial value for all doctors.... The book should become a classic."
—Review in *British Medical Journal.*

The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2

TECHNIQUES IN PHYSIOTHERAPY
Edited by
F. L. GREENHILL, S.R.N., M.C.S.P., T.H.T.
Sister-in-Charge, Medical Rehabilitation Unit, Royal Free Hospital; Late Sister-in-Charge, Rehabilitation Unit, Hill End E.M.S. Hospital (St. Bartholomew's); Former Member Council of Chartered Society of Physiotherapy.

Assisted by
C. B. HEALD, C.B.E., M.D., F.R.C.P., in Rheumatism and Arthritis.
J. N. BARRON, F.R.C.S., in Burns and Injuries of the Hand.
Mr. J. COLSON, M.C.S.P., M.A.O.T., Occupational Therapy in Medicine and Surgery.

Demy 8vo Pages 222 + x 8 plates 34 figures
12s. 6d. net, plus 7d. postage.

Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4

New and Valuable Volumes

THE MEDICAL DIRECTORY 1954
110th Annual Issue
Part 1. A-L.
Part 2. M-Z and Local Lists, Hospitals, Universities, etc.
72s. complete.

HYPERTENSION
Humoral and Neurogenic Factors
A Ciba Foundation Symposium
73 Illustrations. 30s.

THE PRACTICE OF REFRACTION
By Sir STEWART DUKE-ELDER, *K.C.V.O.*, M.A., M.D., D.Sc., F.R.C.S., F.A.C.S. *Sixth Edition.* 239 Illustrations. 21s.

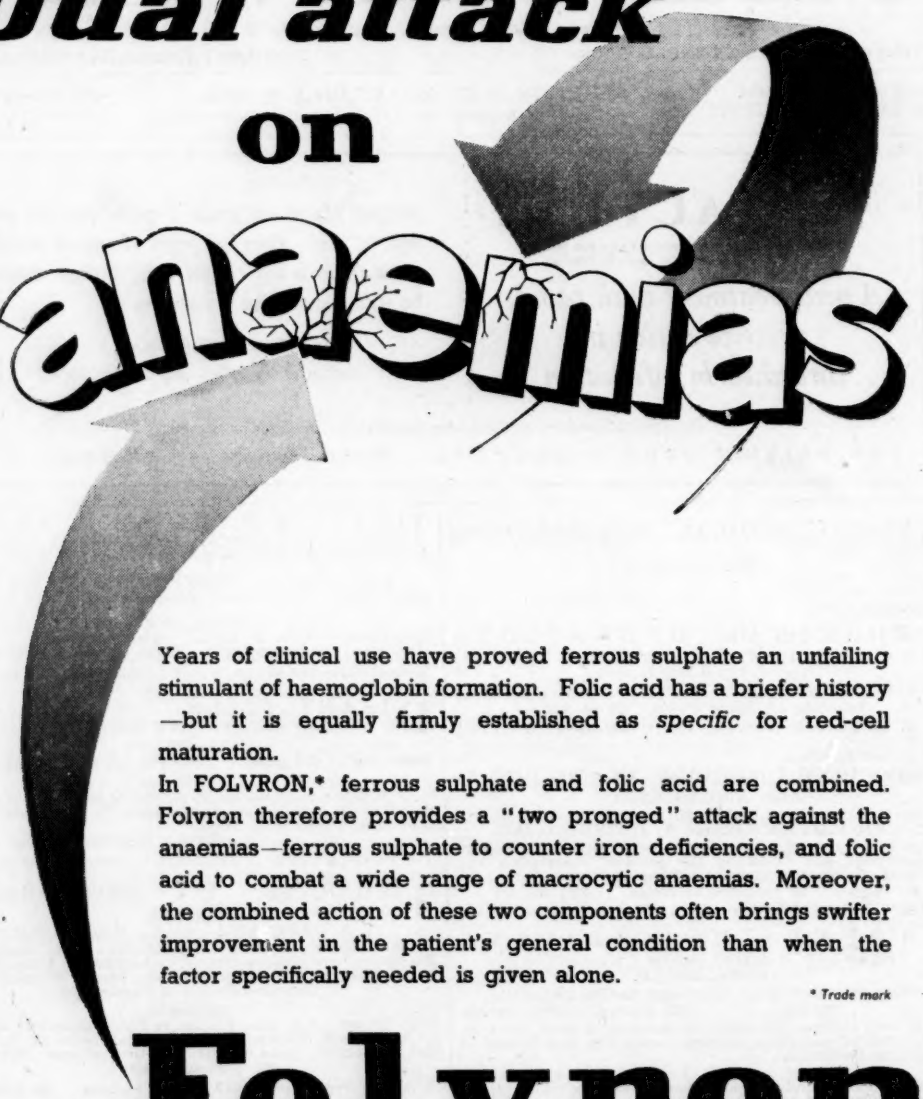
TWENTY-FIVE YEARS
The Story of the Royal College of Obstetricians and Gynæcologists, 1929–1954
By Sir WILLIAM FLETCHER SHAW, M.D., F.R.C.P., F.R.C.O.G., Hon. LL.D. 12 Plates. 21s.

THE HEALTH OF THE COMMUNITY
Principles of Public Health for Practitioners and Students
By C. FRASER BROCKINGTON, M.D., M.R.C.S., D.P.H. Foreword by Sir JOHN STOPFORD, M.D., Sc.D., LL.D., F.R.C.P., F.R.S. 32s.

MEDICAL PROGRESS, 1954
A Review of Medical Advances during 1953
Edited by MORRIS FISHBEIN, M.D. 36s.

J. & A. CHURCHILL LTD., 104 GLOUCESTER PLACE, LONDON, W.1

Dual attack on anaemias



Years of clinical use have proved ferrous sulphate an unfailing stimulant of haemoglobin formation. Folic acid has a briefer history—but it is equally firmly established as *specific* for red-cell maturation.

In FOLVRON,* ferrous sulphate and folic acid are combined. Folvron therefore provides a "two pronged" attack against the anaemias—ferrous sulphate to counter iron deficiencies, and folic acid to combat a wide range of macrocytic anaemias. Moreover, the combined action of these two components often brings swifter improvement in the patient's general condition than when the factor specifically needed is given alone.

* Trade mark

Folvron

FOLIC ACID AND IRON

NOW IN 3 FORMS—Capsules, Tablets and Elixir. The Elixir is specially suitable for administration to children.

CAPSULES: FOLVITE* folic acid 1·7 mg., ferrous sulphate exsiccated, 3 grains per capsule. Bottles of 100 and 1,000

TABLETS: FOLVITE folic acid 1·7 mg., ferrous sulphate exsiccated, 3 grains per tablet. Bottles of 100 and 1000

ELIXIR: FOLVITE folic acid 0·89 m.g., ferrous gluconate 281 mg., alcohol, 2% per teaspoonful (4cc.). Bottles of 16 fl. oz.

LOOK TO Lederle FOR LEADERSHIP

LEDERLE LABORATORIES DIVISION

Cyanamid Products Ltd.

BUSH HOUSE · ALDWYCH · LONDON · W.C.2. TEMPLE BAR 5411

JULY 3, 1954 PAGES 1 TO 50

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, PATHOLOGY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 6827 LONDON: SATURDAY, JULY 3, 1954 CCLXVII

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ORIGINAL ARTICLES

Cerebral Basis of Temperament and Personality
DENIS WILLIAMS, F.R.C.P.... 1
Billroth-I Gastric Resection
E. J. SCHMITZ, M.D.
Prof. H. N. HARKINS, M.D.
H. G. MOORE, M.D.
H. H. OLSON, M.D..... 4
Fluid and Electrolyte Exchange in Patients with Burns
J. P. BULL, M.D.
N. W. J. ENGLAND, M.B..... 9
Type-12 Streptococci Associated with Acute Hæmorrhagic Nephritis
MARY J. WILMERS, F.R.C.P.
A. C. CUNLIFFE, M.D.
R. E. O. WILLIAMS, M.D..... 17
Muscle Resistance to Stretch of the Biceps Brachii in the Early Stage of Poliomyelitis
G. P. MITCHELL, F.R.C.S.E. .. 18
A Chloro-derivative of Cortisone
R. K. CALLOW, D.PHIL.
JENNIFER LLOYD, B.SC.
D. A. LONG, M.D. 20
Positive-pressure Respiration
JAMES MACRAE, F.R.F.P.S.
G. D. W. MCKENDRICK, M.R.C.P.
E. M. SEFTON, M.R.C.S.
R. V. WALLEY, M.B..... 21
Spontaneous Torsion of the Spleen
L. MICHAELS, M.B..... 23

POINTS OF VIEW

Gospel for Gerontocrats
STEPHEN TAYLOR, M.D..... 34

RECONSTRUCTION

General Practice in the N.H.S... 32

REVIEWS

Notices of Books 23

PUBLIC HEALTH

Working Together..... 34

IN ENGLAND NOW

A Running Commentary by Peripatetic Correspondents.... 36

LEADING ARTICLES

BILLROTH-I GASTRECTOMY 25
DIAGNOSIS AND TREATMENT OF ADRENOCORTICAL DISORDERS .. 26
SASKATCHEWAN AND SHEFFIELD.. 27

ANNOTATIONS

Cancer Research 28
The Cup that Cheers..... 29
Bed Rest after Myocardial Infarction..... 29
Smoking and Cancer of the Lung.. 30
Rationing and Special Diets..... 30
Liver and Metabolism in Malaria 31

LETTERS TO THE EDITOR

Diet and Coronary Disease (Prof. Ancel Keys, PH.D.)..... 37
The Position of Neurology (Dr. J. W. Paulley)..... 38
Pancreatitis (Dr. M. J. G. Lynch) 38
Mental Care (Dr. Elizabeth Tylden) 38
Infection with Drug-resistant Tubercle Bacilli (Dr. Diana Owen) 39
Arthroplasty *v.* Arthrodesis (Mr. T. T. Stamm, F.R.C.S.)..... 39
Injection of Lactic Acid into the Osteo-arthritic Hip (Mr. W. Grant Waugh, F.R.C.S.E.)..... 39
Potentiation of Cortisone by Glycyrrhetinic Acid (Dr. J. Levy-Zaks) 40
Clinical Tests for Ketonuria (Dr. G. A. Smart)..... 40
The Synergic Action of Muscles (Dr. I. A. Guest)..... 40
Damages and Refusal of Treatment (Dr. I. R. Nussbaum)..... 41
Effect of Potassium Iodate on Endemic Goitre and Protein-bound Iodine Levels in School-children (Mr. Isidor Greenwald, PH.D.) 41
Renin (Mr. John Sophian, F.R.C.S.) 41
"Earthing" in the Operating-theatre (Dr. R. N. G. Atherstone) 42
Treatment of Deafness (Mrs. Elizabeth Chadwick)..... 42
Aureomycin in Teitze's Disease (Lieut.-Colonel Inder Singh, F.R.F.P.S.)..... 42
Certification (Mr. H. G. Woodley) 43
Hepatic Coma (Mr. T. P. Whitehead, F.R.I.C., Dr. S. R. F. Whittaker, Dr. A. P. Prior; Dr. A. L. Wyman)..... 43
Beyond Spens (Mr. G. Dalley, M.R.C.O.G.) 44
The Plight of Senior Registrars (Prof. R. S. Illingworth, F.R.C.P.) 44
Nursing the Tuberculous (Lieut.-Colonel J. Mackay-Dick, F.R.C.P.E.) 44
An American in Britain (Dr. J. D. Kershaw; Dr. David Pyke; Dr. Duncan Leys)..... 45

MEDICINE AND THE LAW

Domestic or Professional ?..... 46

PARLIAMENT

Medical Advertising by Television 46
Question Time..... 46

NOTES AND NEWS

Presentation to Sir Alexander Fleming 48
Junior Hospital Medical Officers.. 48
The Lister Institute..... 48
The S.H.M.O..... 48
Old Men in Common Lodgings.... 48
British-American Hospital in Madrid..... 49
The Elderly Worker..... 49

University of Cambridge..... 49
University of London..... 49
University of Bristol..... 49
Queen's University, Belfast..... 49
University of Glasgow..... 50
Royal College of Surgeons of England 50
Royal Australasian College of Physicians..... 50
Order of St. John of Jerusalem... 50
International Congress on Chest Diseases..... 50
St. Bartholomew's Hospital Medical College..... 50

Diary of the Week..... 47
Appointments..... 47
Births, Marriages, and Deaths.... 47

CONGESTIVE HEART FAILURE—ANGINA PECTORIS—ASTHMA

CARDOPHYLIN BEGD.

THEOPHYLLINE ETHYLENEDIAMINE

Literature is available on request— Benger Laboratories

BENGER LABORATORIES LIMITED · HOLMES CHAPEL · CHESHIRE · ENGLAND

OXFORD MEDICAL

PUBLICATIONS

CUNNINGHAM'S TEXTBOOK OF ANATOMY

Edited by J. C. BRASH, *M.C., LL.D., M.D., D.Sc., F.R.C.S.(Ed.), F.R.S.E.*

'The form, the text, the illustrations, and the production all compel admiration, and this edition will enhance the book's reputation.'—THE LANCET.

NINTH EDITION 1624 *pages* 88 *plates* 1252 *figures* (699 *in colour*) **90s.** *net*

TUBERCULOSIS OF BONE AND JOINT

by the late G. R. GIRDLESTONE
and E. W. SOMERVILLE, *M.B., F.R.C.S.(Ed.)*

'Still the standard work on surgical tuberculosis.'—THE IRISH JOURNAL OF MEDICAL SCIENCE.

SECOND EDITION 322 *pages* 260 *illustrations* **45s.** *net*

TEXTBOOK OF BACTERIOLOGY

by C. H. BROWNING, *LL.D., M.D., D.P.H., F.R.S.*
and T. J. MACKIE, *C.B.E., LL.D., M.D., D.P.H.*

'Contains far more detailed information than the majority of single-volume works on bacteriology, which should commend it to the more ambitious student who is not content with a book containing only the minimum that he should know.'
—BRITISH MEDICAL BULLETIN.

918 *pages* 226 *illustrations* **50s.** *net*

OXFORD UNIVERSITY PRESS

HENRY KIMPTON'S PUBLICATIONS

New (4th) Edition — Just Ready

ROENTGENOGRAPHIC TECHNIQUE
A Manual for Physicians, Students and Technicians
By **DARMON ARTELLE RHINEHART**, A.M., M.D., F.A.C.R.
FOURTH EDITION, REVISED
Royal Octavo — 454 Pages — 216 Illustrations — Cloth — Price **63s.** net

New Book — Just Ready

CARDIOVASCULAR SURGERY
By **GERALD H. PRATT**, M.D., F.A.C.S.
Royal Octavo — 843 Pages — 353 Illustrations on 261 Figures and 4 Coloured Plates — Cloth — Price **£5 10s.** net

GASTROINTESTINAL X-RAY DIAGNOSIS
By **MAX RITVO**, M.D., and **I. A. SHAUFFER**, M.D.
Large Octavo — 838 Pages — 470 Illustrations, including 2 in Colour — Cloth — Price **£7 10s.** net

DISEASES OF CHILDREN'S EYES
By **JAMES HAMILTON DOGGART**, M.A., M.D., F.R.C.S. Eng.
SECOND EDITION, REVISED
Royal Octavo — xvi+304 Pages — 211 Illustrations, including 33 Coloured Plates — Cloth — Price **42s.** net

OCULAR SIGNS IN SLIT-LAMP MICROSCOPY
By **JAMES HAMILTON DOGGART**, M.A., M.D., F.R.C.S. Eng.
Royal Octavo — xiii+112 Pages — 93 Illustrations, 85 in Colour — Cloth — Price **21s.** net (postage 8d.)

25 Bloomsbury Way **HENRY KIMPTON** **London, W.C.1**
Medical Book Department of Hirschfeld Brothers Ltd.

New *NAPT* Publication . . .

BCG AND VOLE VACCINATION

A Practical Handbook by

K. NEVILLE IRVINE, MA, DM, BCh, MRCS, LRCP
Adviser in BCG Vaccination to Oxford Regional Hospital Board

Foreword by FREDERICK HEAF, MA, MD, FRCP
David Davies Professor of Tuberculosis, The Welsh National School of Medicine

96 pages, comprehensive index, 10 coloured plates

Clothbound ***Twelve shillings and sixpence***

Order direct from:

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS
Tavistock House North, Tavistock Square, London, W.C.1

RYOTOL
for
Chronic Discharge of the Ear

because

RYOTOL is lethal to Ps. Pyocyanea, Staphylococcus aureus, Proteus vulgaris and Streptococcus pyogenes found in C.S.O.M. and Otitis Externa.

The presence of Ps. Pyocyanea has been demonstrated in 90% of cases of chronically discharging ears. This gram-negative, highly resistant organism is unaffected by penicillin, sulphonamides and many other bactericides. It produces abundant pus and is therefore extremely troublesome.

RYOTOL Ear Drops are the outcome of official clinical work on humans, following outstanding results obtained in the veterinary field.

Formula:

Monophenyl ether of ethylene glycol	2.0% v/v
Phenylmercuric Nitrate	0.1% w/v
Phenyl-dimethyl iso-pyrazolone in a stabilised non-irritant base	5% w/v

Samples and literature gladly forwarded on request.

RYBAR LABORATORIES LTD.

TANKERTON · KENT

P.B.4A

H. K. LEWIS & Co. Ltd.
MEDICAL PUBLISHERS AND BOOKSELLERS

TEXTBOOKS AND WORKS IN MEDICAL, SURGICAL AND GENERAL SCIENCE OF ALL PUBLISHERS
Catalogues on application. Please state interests.

FOREIGN BOOKS: Select stock. Books obtained from abroad under Board of Trade licence.
SECOND-HAND BOOKS: A constantly changing large stock of Medical and Scientific Literature on view, classified under subjects.
MEDICAL STATIONERY: Loose-Leaf Case Books, Card Index Systems, etc.

MEDICAL AND SCIENTIFIC LENDING LIBRARY
Annual Subscription from Twenty-five Shillings Prospectus on application
The Library Catalogue revised to December, 1949, containing a classified Index of Authors and Subjects. Pp. xii + 1152. To subscribers 17s. 6d. net; to non-subscribers 35s. net; postage 1s. 3d.
Supplement 1950–52. To subscribers 3s. net; to non-subscribers 6s. net; postage 6d.

H. K. LEWIS & Co. Ltd., 136 GOWER STREET, LONDON, W.C.1 Phone: EUSton 4282

Throughout the country

FAILING LACTATION

continues to be replaced by

SUCCESSFUL BREASTFEEDING

with the aid of

LACTAGOL
THE GALACTAGOGUE

Samples are always available for clinical trial

LACTAGOL LTD., 423, LONDON ROAD, MITCHAM, SURREY

IN FEBRILE CONDITIONS

Because LUCOZADE is so palatable it is frequently given to children and adults in febrile conditions. These patients, off their food, yet in need of the sustenance which LUCOZADE so attractively supplies, respond quickly to glucose presented in this delightful, non-nauseating form.

LUCOZADE

the sparkling **GLUCOSE** *drink*

VALOXYLIN
Trade Mark

Whole liver extract reinforced with vitamin B12

For the treatment of pernicious anaemia with or without neurological manifestations and for those other types of macrocytic anaemia which also respond to liver therapy. For sprue and as a general tonic.

Literature and prices on request.

AN OXOID PRODUCT

OXOID

OXO LTD (Medical Dept.) Thames House, London, E.C.4 Tel. CENtral 9781

NUTRITION

IN HEALTH—
CONVALESCENCE
—SICKNESS

The protein-sparing effect of milk protein is reinforced in St. Ivel (Lactic) Cheese on account of its readily digestible nature and the effect of the Lactobacilli on intestinal flora and *p*H.

These properties are of great value to the diabetic because this cheese can be consumed in any quantity desired as it contains only a trace of carbohydrate. It makes a valuable and much appreciated contribution to what is often an irksome diet. It helps to keep digestive upsets to a minimum and to enable the patient to obtain full benefit from the other constituents of a restricted diet.

***Communications* should be addressed to the Director, Central Laboratory, Aplin & Barrett, Ltd., Yeovil, Somerset.**

DEVELOPMENT
of the

SERVICE

DUNCAN, FLOCKHART & COMPANY, LTD., announce that after 1st July, 1954, they will concentrate their activities on the further development of their Speciality Products.

Distribution of DUNCAN ANÆSTHETICS and MEDICAL SPECIALITIES will be continued from stocks held at their Edinburgh and London premises.

The former service to retail chemists in Scotland will be operated by the parent Company, T. & H. Smith Ltd., from their premises in Edinburgh and Glasgow.

DUNCAN, FLOCKHART & CO., LTD. 104/8 Holyrood Road, Edinburgh, 8
155/7 Farringdon Road, London, E.C.1

FOR THE MENOPAUSAL PATIENT

HEWŒSTROL

Trade Mark

A pleasantly flavoured elixir containing Ethinylœstradiol* B.P. 0·02 mgm. in each teaspoonful (60 minims).

It provides maximum œstrogenic activity with minimum dosage. The absence of side effects and feeling of well-being generally experienced means that the patient's freedom from discomfort is complete.

Packed in bottles of 4 fl. oz. and 20 fl. oz.

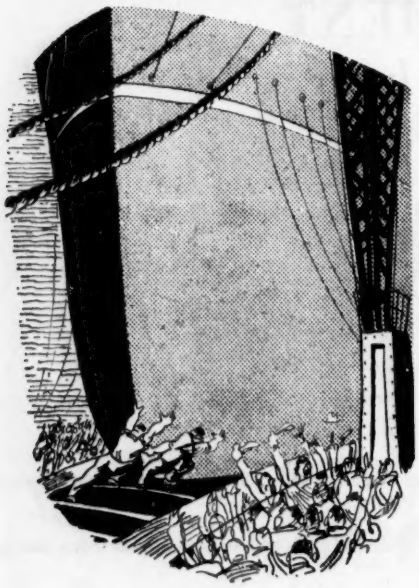
Samples and literature on request

C. J. HEWLETT & SON, LTD.

Manufacturing Chemists

35-43 CHARLOTTE ROAD, LONDON, E.C.2

and at 216 ORR STREET, GLASGOW, S.E.



Assisting THE MOVEMENT

In cases where colonic stimulation is indicated, 'PETROLAGAR' assists the movement surely but subtly. By supplying an unabsorbable emulsion that augments the intestinal fluid content, it provides a soft ductile fæcal mass that promotes a comfortable, natural bowel action, and encourages the return of normal habit. Agreeable to take, 'PETROLAGAR' is issued in two varieties: Plain and with Phenolphthalein.

'PETROLAGAR'
Trade Mark
EMULSION

Wyeth

John Wyeth & Brother Ltd., Clifton House, Euston Road, N.W.1

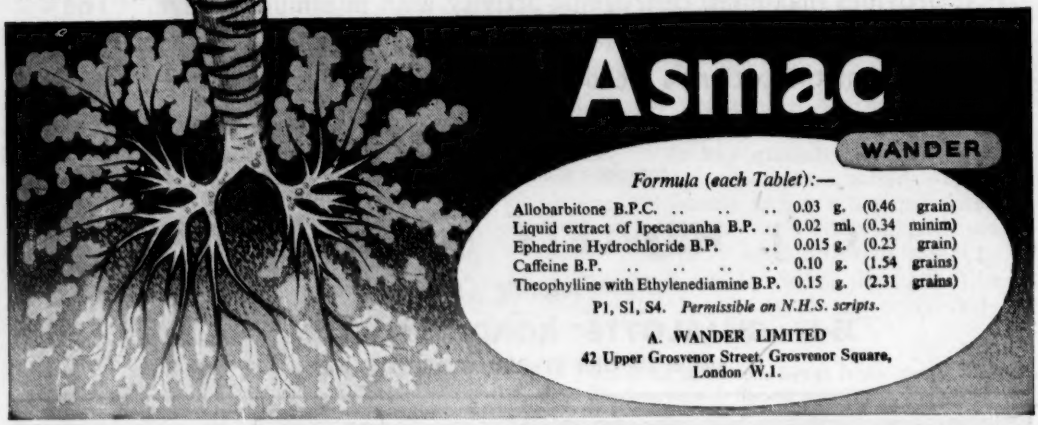
Relieving the bronchial tree in asthma

'ASMAC' TABLETS are formularized to provide symptomatic relief of the bronchial tree both during actual dyspnoeic attacks of bronchial asthma, and during remissions.

'Asmac' Tablets combine in a single prescription 'official' drugs recognized for their reliability to effect mental sedation, decongestion, expectoration and bronchodilatation.

Packs and Cost to Pharmacists:
Standard Tube of 20 : 3/-
Dispensing Bottles :
100, 12/-; 500, 52/6;
1000, 102/6

M372.



Asmac

WANDER

Formula (each Tablet):—

Allobarbitone B.P.C.	0.03 g.	(0.46	grain)
Liquid extract of Ipecacuanha B.P.	0.02 ml.	(0.34	minim)
Ephedrine Hydrochloride B.P.	0.015 g.	(0.23	grain)
Caffeine B.P.	0.10 g.	(1.54	grains)
Theophylline with Ethylenediamine B.P.	0.15 g.	(2.31	grains)

P1, S1, S4. *Permissible on N.H.S. scripts.*

A. WANDER LIMITED
42 Upper Grosvenor Street, Grosvenor Square,
London W.1.

magnesium trisilicate

Pattinson's REGD. BRAND

One of the fine Magnesium Chemicals made for the Pharmaceutical Industry by

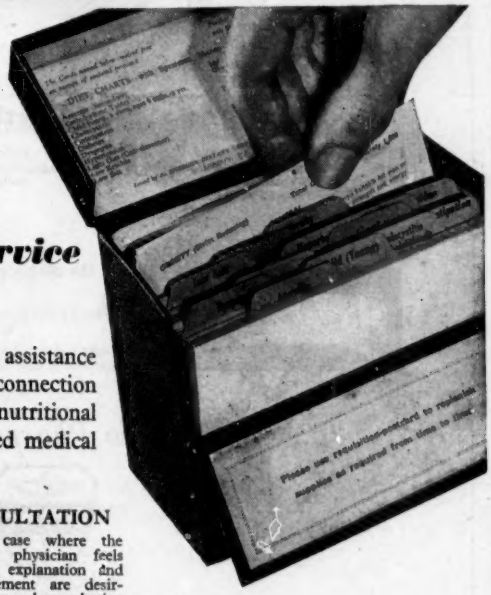
PATTINSON'S LIGHT MAGNESIUM TRISILICATE is a fine, odourless, almost tasteless white powder conforming in every respect to the specification of the British Pharmacopœia 1953.

Its value in the treatment of peptic ulcer and related disorders results from its ability to preserve the pH within a most desirable range over an extended period; at the same time, by a threefold action of coating ulcerated areas with gelatinous silica, adsorbing pepsin, and inhibiting excessive peptic activity, it protects damaged and ulcerated areas from proteolysis.

Noted for its palatability and freedom from adverse after-effects, it is non-eructating and does not induce alkalosis or acid rebound. Any tendency to constipation is reduced by its gentle laxative action.

THE WASHINGTON CHEMICAL CO. LTD.

WASHINGTON, CO. DURHAM. *A member of the* TURNER & NEWALL ORGANISATION



A free, practical dietary service for the practitioner

The Energen Dietary Service offers information and assistance in all dietary and nutritional problems, whether in connection with individual patients or in the wider field of nutritional research. The Service is available only to registered medical practitioners. The principal facilities include:

STANDARD DIETS
A desk filing box is supplied containing an indexed supply of diet cards covering a wide range of common ailments, and suitable for handing to patients.

SPECIAL DIETS
The clinical features of many patients require individual consideration. Special diets are prepared on receipt of appropriate information from the attending physician.

CONSULTATION
In any case where the attending physician feels that full explanation and encouragement are desirable, a personal consultation may be arranged with the senior dietitian.

FREE TO MEDICAL PRACTITIONERS

"Diet and the General Practitioner," a 40-page book of monographs on specific dietary problems. Apply on a postcard, or send your professional card, mentioning this publication.

There is no charge for any of the services of the

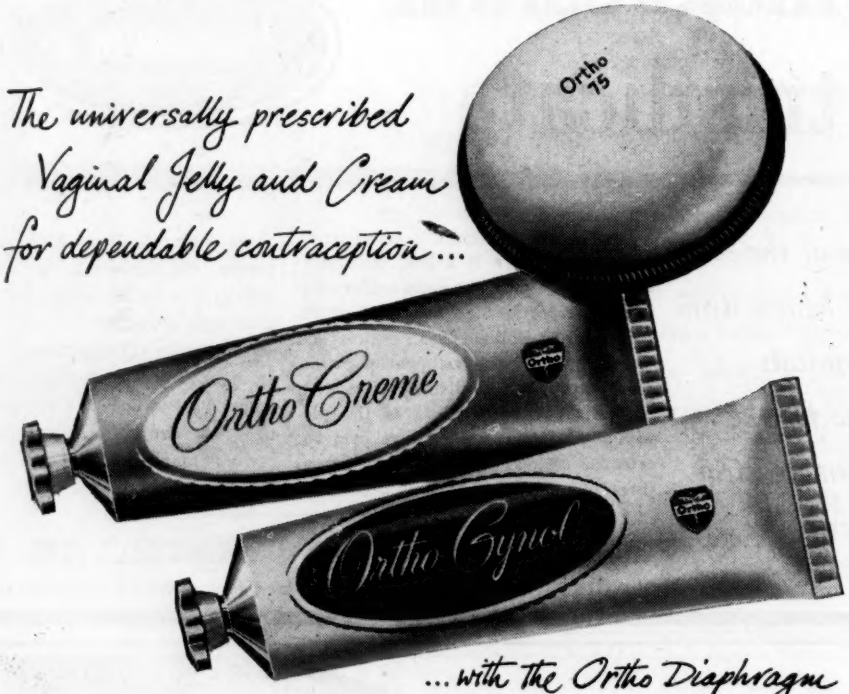
ENERGEN DIETARY SERVICE

25a, Bryanston Square, London, W.1.

AMBassador 9332.

Note: The service is available in the U.K. only.

The universally prescribed Vaginal Jelly and Cream for dependable contraception...



...with the Ortho Diaphragm

Ortho-Gynol
Ricinoleic acid and p-Diisobutylphenoxypolyethoxyethanol in a vegetable gum base buffered at pH.4.5

Ortho-Creme
Ricinoleic acid and sodium lauryl sulphate in a cream base buffered at pH.5.8

Ortho Diaphragm
Coil-spring or flat-spring type in sizes 55 mm. to 95 mm.

Where the diaphragm is impractical or unacceptable

Preceptin Vaginal Gel* provides the "barrier" effect in its unique synthetic base. Simply applied with the Ortho Applicator

* Ricinoleic acid and p-Diisobutylphenoxypolyethoxyethanol in a synthetic base buffered at pH.4.5

LITERATURE ON REQUEST

Ortho Pharmaceutical Limited

Ortho

HIGH WYCOMBE · BUCKINGHAMSHIRE · ENGLAND

Attacks of MIGRAINE

respond to ORAL TREATMENT

with CAFERGOT

The parenteral administration of cerebral vasoconstrictors of the ergot series was formerly imperative to abort so many as 80 to 90 per cent. of migraine attacks.

CAFERGOT given ORALLY is effective in at least 80 per cent. of attacks.

CAFERGOT is a combination of ergotamine tartrate (1 mg.) and caffeine (100 mg.)

References

Proc. Mayo Clin., 1948, **23**, 105.
New England J. Med., 1949, **241**, 896.
J. Mo. med. Ass., 1951, **48**, 963.

Full information on request

SANDOZ PRODUCTS LIMITED

134, Wigmore Street, London, W.1.

SANDOZ

NOW substantially reduced in price!

RAUWILOID

Brand

alkaloids of Rauwolfia serpentina Benth

Rauwiloid is unique. It contains in a refined form all the desirable principles of Rauwolfia serpentina including reserpine and the newly discovered hypotensive alkaloid rescinnamine. +

+ Proc. Soc., Exper. Biol. and Med., 1954 in press

DOSE: 2 tablets per day

Initially the basic N.H.S. cost of one day's treatment is now less than 5d. Once maximum response is obtained, the daily dose can be halved.

Rauwiloid is available in tablets of 2 mg. in bottles of 60 and 500 tablets

"RAUWILOID" is a Registered Trade Mark

Regd. Users:

RIKER LABORATORIES LIMITED

MORLEY STREET · LOUGHBOROUGH · LEICS.

Growing Testimony

For many years now, mothers have known and trusted Ostermilk . . . and a generation of sturdy Ostermilk babies has shown that this trust is well deserved. Ostermilk owes its success to its purity, digestibility and nutritional value. *Purity* . . . because it is rich, clean milk, dried on heated rollers. *Digestibility* . . . because it is modified to suit young digestions; the curd formed in the baby's stomach is light and flocculent, like that of breast milk. *Nutritional value* . . . because it contains all the essential constituents of breast milk, plus extra vitamin D and iron to guard against rickets and nutritional anaemia.

OSTERMILK

Trade mark

1 lb. tins : No. 1—fat modified ; No. 2—full cream

GLAXO LABORATORIES LIMITED, GREENFORD, MIDDLESEX BYRon 3434

announcing

for combined
ORAL PENICILLIN and 'SULPHAMEZATHINE' Therapy

'SULMEZIL' preparations provide an ideal means of administering 'Sulphamezathine' and penicillin together. They have the advantage of containing what is undoubtedly the best sulphonamide for routine use and the most stable salt of penicillin that gives reliable absorption and effective blood levels.

Presented in two convenient forms:—

'Sulmezil'

and

'Sulmezil'

TABLETS

Each containing 0.5 gramme 'Sulphamezathine' Sulphadimidine B.P. and 150,000 units of 'Dibencil' benzathine penicillin.

ORAL SUSPENSION

Containing in each fluid drachm, 0.5 gramme 'Sulphamezathine' Sulphadimidine B.P. and 150,000 units 'Dibencil' benzathine penicillin. The Suspension is pleasantly flavoured and free from the characteristic taste of either penicillin or sulphonamide. It is a stable preparation and is particularly suitable for combined therapy in children.

In the treatment of bacterial infections sensitive to either penicillin or sulphonamide therapy,
'SULMEZIL' TABLETS AND ORAL SUSPENSION provide:—

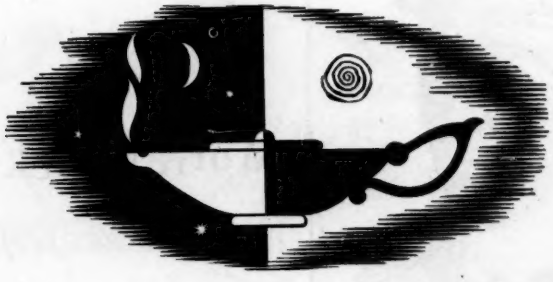
- *Cover against a wide range of organisms*
- *Cover against mixed infections*
- *Increased effectiveness*
- *Maximum convenience*

Note: Under the National Health Service the basic cost of 25 'SULMEZIL' TABLETS is 13/4d. Free from P.T. The basic cost of a 50 c.c. bottle of 'SULMEZIL' ORAL SUSPENSION (containing 14 teaspoonful doses) is 9/4d. Free from P.T.

IMPERIAL CHEMICAL (PHARMACEUTICALS) LIMITED
A subsidiary company of Imperial Chemical Industries Limited
Wilmslow, Manchester

ICI

Ph.456



research unceasing . . .

The work of research is never done. Isolation . . . analysis . . . synthesis . . . often months of painstaking work are necessary before success is achieved. This is no new experience for Parke-Davis. For over eighty years the Company has been dedicated to a policy of investigation and original research—a policy that has resulted in an impressive list of achievements.

Many problems still confront the physician. To their solution the new Parke-Davis research laboratories now completed at Hounslow will make their full contribution in the years to come.

PARKE, DAVIS & COMPANY LIMITED (Inc. U.S.A.) HOUNSLOW, MIDDLESEX Tel.: Hounslow 2361

The new Research and Administration building at Hounslow contains some of the most modern laboratories in the world. Here, under ideal conditions, Parke-Davis research continues unceasingly.

521

for

Motion Sickness

treatment or prophylaxis

The value of ' Dramamine ' in the prophylaxis and treatment of all forms of motion sickness has now been clearly established. Side effects are so slight that ' Dramamine ' may confidently be prescribed for all travellers by land, sea or air to enable them to undertake their journeys happily and well. ' Dramamine ' is also beneficial in the symptomatic control of nausea and vomiting due to pregnancy, electro-convulsive therapy, narcotisation and certain drugs (antibiotics, etc.).

SEARLE

Dramamine

TABLETS

Brand of dimenhydrinate

The therapeutic efficacy of ' Dramamine' also extends to Ménière's Syndrome, irradiation sickness, the vertigo of hypertension, fenestration procedures and labyrinthitis. ' Dramamine ' is valuable in treating vestibular dysfunction after streptomycin therapy. It may be administered orally and rectally, and dosage may be continued over long periods if necessary. ' Dramamine ' is supplied as 50 mg. tablets, in bottles of 12, 36 and 1,000 and in strips of 100 tablets.

Literature on request.

* TRADE MARK.

SEARLE

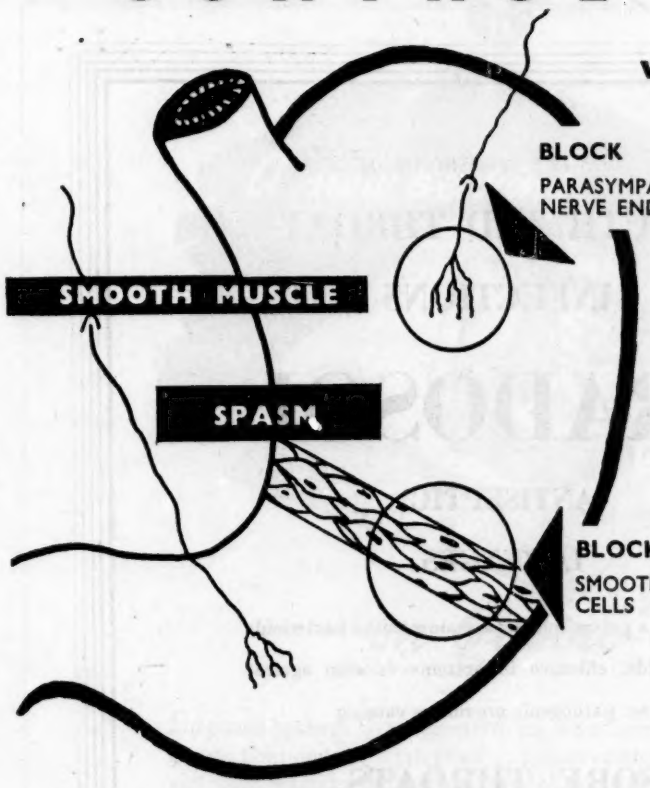
Ethical Pharmaceuticals since 1888

G.D. SEARLE & CO., LTD.

17, Manchester Street
London, W.1.

Telephone: Welbeck 1306.

CONTROL



VIRTUALLY WITHOUT SIDE EFFECTS

NO BLURRED VISION

NO DRY MOUTH

NO CARDIAC EFFECTS

NO URINARY RETENTION

A NEW ANTISPASMODIC AGENT

It has been demonstrated in animal experiments that the new compound bentyl hydrochloride* (beta-diethylaminoethyl 1-cyclohexylcyclohexanecarboxylate hydrochloride) possesses both a parasympathetic depressant (atropine-like) and musculotropic (papaverine-like) action on the smooth musculature of the gastrointestinal tract. Hock administered this drug to 67 patients with such gastrointestinal complaints as functional bowel distress, peptic ulcer, chronic pancreatitis and gastroenteritis. The usual dosage was 10 or 20 mg. three or four times daily, with or without 15 to 30 mg. of phenobarbital. The drug was well tolerated in 66 of 67 patients and was stopped in only one patient who showed intolerance to other drugs also. Bentyl hydrochloride appears to be more effective than the belladonna group of antispasmodics and has the advantage of virtual freedom from cycloplegia, mydriasis and xerostomia.

Extract from The Journal of the American Medical Association, Vol. 145, No. 17.

* BENTYL — Bentyl hydrochloride is a Product developed by the MERRELL LABORATORIES, established in 1828 in America. It is marketed in the United Kingdom under the name of MERBENTYL, and is available both plain and with Phenobarbitone.

MERBENTYL — *Merbentyl and Merbentyl with Phenobarbitone are each available in bottles of 50 and 250 tablets. Each tablet of Merbentyl contains 10 mg. of Dicyclamine Hydrochloride. Tablets of Merbentyl with Phenobarbitone contain 10 mg. of Merbentyl and 15 mg. of Phenobarbitone. Literature and sample available on request.*

MERBENTYL RÉGD

Distributed in the United Kingdom by
RIKER LABORATORIES LIMITED, LOUGHBOROUGH, LEICS.
for the Wm. S. Merrell Company, London.

Merrell research

*A

For the treatment of

MOUTH AND THROAT INFECTIONS

BRADOSOL

ANTISEPTIC LOZENGES

Bradosol is a potent quaternary ammonium bactericide and fungicide, effective in extreme dilution against most pathogenic organisms causing

SORE THROATS

- **Well tolerated and virtually non-toxic**
- **Does not produce resistant strains**
- **Effective against fungi**
- **Does not contain potentially toxic local anaesthetics**

Tubes of 20 Lozenges

Each lozenge contains 0.5 mg. β-phenoxy-ethyl-dimethyl-dodecyl ammonium bromide.

CIBA

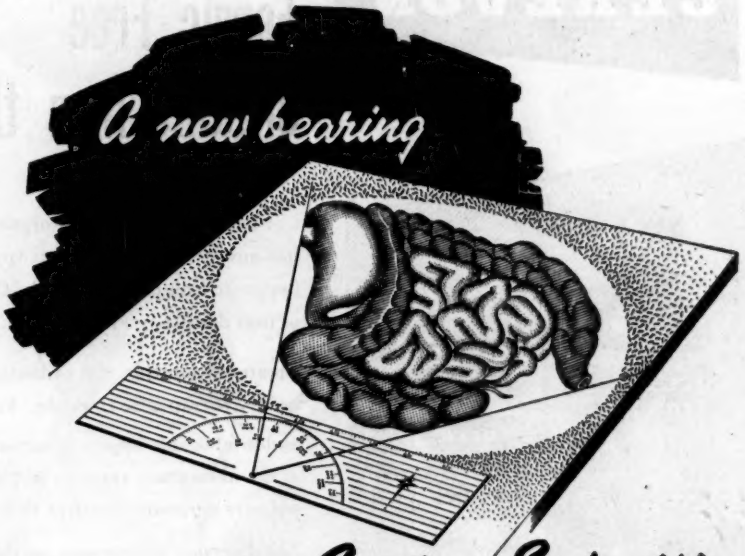
'Bradosol' is a registered trade mark. Reg. user

CIBA LABORATORIES LIMITED

HORSHAM · SUSSEX

Telephone: Horsham 1234 Telegrams: Cibalabs, Horsham

4/2



on Gastro-Enteritis

Emphasis has been given recently to the use of combined chemotherapy in infections and the merit of the judicious combination of antibiotics and sulphonamides in the prevention of bacterial resistance.

In the treatment of many infections of the gastro-intestinal tract, combined therapy with streptomycin and sulphaguanidine is a distinct advance on previous forms of treatment.

Guanimycin, in which oral streptomycin sulphate is combined with sulphaguanidine, is indicated in the treatment of gastro-enteritis, bacillary dysentery, summer diarrhœa, salmonella food poisoning and other mixed infections of the gastro-intestinal tract in infants, children and adults.

Guanimycin is issued as a free-flowing powder from which a smooth, palatable, homogeneous suspension may be made by simple mixture with water.

GUANIMYCIN

Trade Mark

ORAL STREPTOMYCIN SULPHATE with SULPHAGUANIDINE

In bottles to prepare 4 fluid ounces.

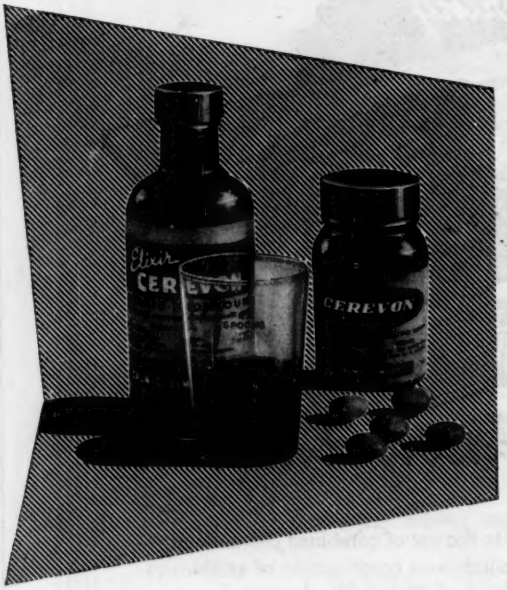
Literature on application.

ALLEN & HANBURYS LTD · LONDON · E·2

TELEPHONE: BISHOPSGATE 3201 (20 LINES). TELEGRAMS: "GREENBURYS, BETH, LONDON"

CEREVON

Ferric Free organic iron therapy



. . . ferrous gluconate, an organic iron salt, has now established itself as superior to inorganic iron preparations in the treatment of iron deficiency anaemias.

Greater absorption and utilisation produce speedy therapeutic response. Furthermore, undesirable side effects of nausea and upset of the alimentary tract do not occur, even in patients normally sensitive to iron.

The Ferrous Gluconate used in our preparations is of our own manufacture and is entirely free from ferric iron.

CEREVON TABLETS

FORMULA: Each tablet contains: Ferrous Gluconate 0.3G.
Available in bottles of: 100 tablets. 1000 tablets.
Prices: 100 tablets 3/2d. plus P.T. 1,000 tablets 29/8d. plus P.T.

CEREVON ELIXIR

FORMULA: Each teaspoonful contains: Ferrous Gluconate 0.3G. Aneurine Hydrochloride 1 mgm. Riboflavin 1 mgm. Nicotinamide 10 mgm.

Available in bottles of:	4 fl. ozs.	20 fl. ozs.	40 fl. ozs.	80 fl. ozs.
Prices:	5/-	24/-	46/-	90/-

elixir or tablets CEREVON

Prescribe CEREVON by name on form E.C. 10.

CALMIC LIMITED · CREWE HALL · CREWE · TEL: 3251-5

London: 2, Mansfield St., W.1. Tel: LANgham 8038-9

Antihistamines for old and young

When the contents of Pandora's Box were released, Hope alone remained. To the patient of allergic diathesis, threatened by a veritable Pandora's Box of ills, the antihistamines 'Histantin' and 'Actidil' represent far more than hope.

For adults 'Histantin' is the product of choice, giving prolonged relief with a minimum of side-effects.

The new quick-acting antihistamine, 'Actidil', exerts its effect for about 12 hours and is also notable for low incidence of side-effects. 'Actidil' Elixir has been specially formulated and clinically tried for the treatment of allergic conditions in children.

'HISTANTIN', *50 mgm., is issued in bottles of 25, 100 and 500 at list prices (subject to usual discount) of 6/6, 24/6, 110/-.*

'ACTIDIL' *compressed products of 2·5 mgm. in bottles of 25 and 500 at list prices (subject) of 6/6 plus 1/3 P.T. and 110/- plus 20/7½ P.T.*

'ACTIDIL' ELIXIR *in bottles of 20 fluid ounces, for dispensing, at a list price (subject) of 15/- plus 2/10 P.T.*

BURROUGHS WELLCOME & CO. *(The Wellcome Foundation Ltd.)* **LONDON**

Ocusol

EYE DROPS

A new preparation containing Sulphacetamide and Zinc Sulphate for the prophylaxis and treatment of infections of the eye

Non-irritant: effective: long-acting: stable: economical

Because of its unique formulation, Ocusol presents all the advantages of optimal therapeutic concentrations of *sulphacetamide* and *zinc sulphate* in a stable and non-irritant solution. Ocusol offers the following significant advantages:

Non-irritant Adjusted tonicity and *p*H.

Effective Powerful bacteriostatic action; increased penetration of tissues.

Long-acting Viscosity ensures minimal loss due to dilution by tears.

Stable Buffered and self-disinfecting.

Economical Great safety & efficiency at low cost.

OCUSOL eye drops contain:

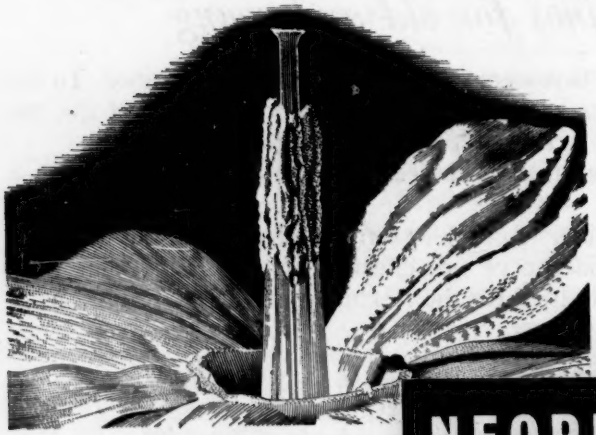
Sulphacetamide Sodium, B.P. 5% w/v.
Zinc Sulphate, B.P. 0.1% w/v
in a buffered *p*H adjusted, viscous medium.
Available in Dropper Bottles of ½ fl. oz.
May be prescribed under the N.H.S. Retail Price 3/-.

For literature please write to The Medical Dept. Boots Pure Drug Co. Ltd. Nottingham

Boots

8185

SENSITIVITY AND COMMON SENSE



Hayfever and allergic rhinitis are often of complex aetiology and tend to persist in spite of the most rigorous treatment. In those cases, however, in which nasal obstruction is the most troublesome symptom, even a measure of relief is welcomed by the patient. Discriminate use of the 'Neophryn'* Spray helps to restore normal nasal function and is probably the best short-term local treatment. Principal advantages are: rapid and prolonged vasoconstriction without secondary congestion, virtual freedom from side-effects, and simple administration by a convenient plastic atomiser.

Basic N.H.S. cost only 2/4

NEOPHRYN

Trade Mark

(*known overseas as 'Neosynephrine'*)
* *l-m-hydroxy-methylaminomethyl alcohol hydrochloride*

Manufactured by

BAYER PRODUCTS LIMITED LONDON · W.C.2

Associated Export Company: WINTHROP PRODUCTS LIMITED, LONDON

CEREBRAL BASIS OF TEMPERAMENT AND PERSONALITY*

DENIS WILLIAMS
M.D., D.Sc. Manc., F.R.C.P.
PHYSICIAN IN CHARGE OF NEUROLOGY, ST. GEORGE'S HOSPITAL, LONDON; PHYSICIAN TO OUTPATIENTS TO THE NATIONAL HOSPITAL, QUEEN SQUARE

STUDY of brain function through clinical observation was initially directed to its simpler disorders, including those of movement, sensation, and vision. Disorders of function were at first related to disturbances of brain structure, though advances in electrical recording techniques have made it possible to examine other aspects of it. Like everyone else, the neurological physician or surgeon has found the whole complex activity of the brain so difficult to study or to measure that he has had to confine himself to parts or units of it. The fundamental observations of Hughlings Jackson concerned simple movements—the muscular contractions of local epilepsy—but from these movements he built up a consistent structure of hypotheses which went far to explain how integration takes place within the cerebral hemispheres. By the study of sensory changes, particularly in epilepsy, he and William Gowers revealed disorders of perception which took their observations into the borderland of psychology. When Ferrier explored brain function he too was dealing with units of behaviour. More recently Gordon Holmes's studies of vision with cerebral lesions have illuminated the basic anatomy and physiology of vision in man.

Whenever disturbed function of this kind was related to disorder of structure, it was profitable to use the more evident and easily described functions—the capacity to move, to feel, to see, or to hear—and consequently the anatomy and physiology of the special areas of the brain very soon achieved a known anatomy and the rudiments of a physiology. Although these special areas constituted so small a part of the whole surface of the brain, long after they had been mapped out, all the other parts of the cerebral cortex were referred to as the "silent areas." And yet everyone recognises today, as Jackson did fifty years ago, that these so-called silent areas determine what we do and are. The functions they serve have concerned the psychologist and psychiatrist. The psychologist has considered human and animal behaviour and has broken it down into its components by direct observation, by experiment, or by reasoning. The psychiatrist has studied aberrations of the behaviour of the whole man but has rarely been able to relate the disturbance he was investigating to disorder of the whole brain or to one of its component parts. Only in the study of speech have the clinical neurologist and the psychologist met on common ground, as in Head's classical Studies in Aphasia.

Simple Disorders of Function

The special sensory areas of the brain which were examined in such detail in the first half of this century contained the first cellular representation in the cortex of the system under study; but each area responsible for one function in the whole organism is surrounded by a larger area of cortex in which the integrations of dependent functions become increasingly complex as we proceed away from the first cell-station. In vision, stimulation of a point in the area striata will cause perception of a flash of white light in a particular position in the visual field, and removal of the same point will cause absolute loss of vision in the same position. Were an abnormal discharge to happen in the same place, a white flash of a similar kind would be experienced, as in an attack of migraine. With similar stimulation or abnormal discharge in one of the areas surrounding the primitive visual area, more complex disturbances of vision than this may be experienced, such as a glow of light (perhaps coloured) when the stimulus is near the primitive area, or a more highly organised hallucination when the stimulus is further removed.

An old lady had for many months been in a mental hospital because she said that she saw processions of absurd little people in highly coloured clothing marching from left to right across her visual field. A medical officer recognised that this fantastic procession was occurring in a blind half-field, and subsequently a cystic glioma was found to be involving the cortex in the parieto-occipital area on the right side in the visual-association cortex to which I have just referred.

As the area of the brain concerned with vision is left, and the area in the parietal lobe dealing with common sensation is approached, irritant lesions may cause complex mixtures of feeling and vision which have led observers to describe the zone as the visuopsychic area, though this is too mechanistic a simplification. The study of the brain through clinical observation in man has been retarded by attempting to relate function with structure in these elaborate areas of integration, although to do so at the first cell-station was both reasonable and possible.

Complex Disorder of Function

The behaviour of any part of the cerebral cortex can be studied by observing (1) its response to stimulation, (2) the effects of a spontaneous discharge within it, or (3) the effects of its destruction. The very basis of neurological examination is to shine a light or stretch a tendon and watch the response, and here the clinician simply uses the mechanism of the reflex arc to give him some understanding of the behaviour of the part of the nervous system under study. But the experienced neurologist spends much more time hearing about the effects of disturbed function in the patients' complaints, and in observing them, than he does in examining reflex behaviour. In doing so he is observing the effects of the lesion on the whole activity of the organism, and study of this sort is often illuminated by the electro-encephalogram. By studying the electrical discharges which occur while a phenomenon is being experienced by the patient or witnessed by the observer, the sites of discharge may be located with some accuracy. When circumstances justify, the pattern of electrical discharge can be mapped out on the surface of the cortex, and observers such as Wilder Penfield have related very complex disturbances of perception to minute foci of electrical discharge in different parts of the brain. Although hallucinations of this kind due to cortical discharge or stimulation may give valuable information, it is difficult to recognise the effects of deprivation of the parts of the brain previously thought to be silent, partly because there seems to be so little tangible to measure. Whereas loss of a portion of the visual cortex will cause a defect in the field of vision, loss of an area of the same size in a visual-association area seems to make little difference.

It should nevertheless be possible to recognise and study disturbances of function of these unexplored areas of the brain, by using procedures like those employed in the study of the first cell-station. This in fact is proving to be so, for careful study of patients with physical disease is showing that disorders of thought and feeling which have seemed the prerogative of the psychologist or psychiatrist can sometimes be related to local disturbances of brain function.

Disorders of thought known to be the result of organic brain disease may be considered in a simple way either as the negation of function—the intellectual defect of a child with a birth injury—or as a positive change in it as in the distortion of normal thinking which happens in schizo-

* Paper read before the Manchester Medical Society on Nov. 4, 1953.

phrenia, surely a physical disease. Equally, disorders of behaviour may be considered as negative—the stupor which is seen after carbon-monoxide poisoning or a brain-stem injury—or positive as in the aggressiveness of a person who has had damage to the anterior part of the temporal lobe.

The Environment

In relating disturbances of perception, thought, or behaviour to brain damage, it is essential to consider the profound effects of the environment, both past and present, upon the individual's behaviour. The ophthalmologist has developed techniques to secure standard physical conditions for examining visual fields, and fortunately his results are not affected by the patient's previous experiences or by what he is feeling or thinking at the time; but obviously this does not apply to the more elaborate aspects of brain function. Indeed the basis of dynamic psychiatry is that what we become is determined by our previous experiences—reflected in the couplet, "On seeing weather-beaten trees":

> "Is it as clearly in our living shown,
> By slant or twist which way the wind has blown?"

There are, then, two determinants of temperament and personality: first, the inborn and physical, depending upon the kind of brain with which the individual is endowed, recognised by Kretschmer in his studies of physical types; and, secondly, the influences and stresses which are exerted upon this basic structure of temperament and personality, particularly in the formative years, which will finally determine the whole pattern of the man. Although the activity of this physical structure is modified by every experience, it seems important to recognise that it is only modified and is not wholly determined by it.

The effect of environment has exercised psychiatrists for the whole of this century. It has dominated psychiatric thought and has often distorted therapeutic wisdom. Although this study was greatly stimulated by Freud's work and that of the Vienna school of psychiatrists, it was also the logical outcome of the earlier 19th century when philosophical and theological speculation were the rule. Partly because of this, and partly, too, because of the absence of suitable techniques, the study of the physical basis of temperament, personality, and behaviour was neglected.

Physical Studies

Intensive study of the cerebral basis of purposive behaviour, feeling, and thought has advanced rapidly in the last ten years, and now the boundaries which were presumed to exist between psychology, psychiatry, and neurology are disappearing. Workers in the three fields share laboratories and clinical material, and there is consequently a striking change in orientation. The reasons seem to be these. With the development of experimental techniques, particularly in electronics, physiology, and biochemistry, animal experiment produced many new facts; but as facts accumulated it became apparent that they were one-sided. Technical methods produced recorded changes, but the animal under study contributed very little by his behaviour, and none by his thought or feeling. Clearly, therefore, there had to be a swing back to the study of man. In psychiatry there have been two reasons for this change: first, the failure of dynamic psychiatry, with its emphasis on the effects of environment, to bring about the expected therapeutic success; and, secondly, the remarkable though totally unexplained success of treatment by physical means—means which include applied physics, chemistry, and surgery. Electroplexy will rapidly induce a persisting change in mood; repeated hypoglycæmia will alter cognition and subsequent thought; and interruption of fibre pathways in the brain will modify temperament, as is shown by the release of tension and perseverating distress in obsessional people.

In experimental psychology, which is no longer distinct from physiology, the effects on animal behaviour of interference with brain structure have been explored by such workers as Lashley and Richter. More recently the exciting work of Magoun and his colleagues in Chicago and then in Los Angeles has shown that the whole behaviour of the cerebral hemispheres, as seen in its electrical activity and in the spontaneous movements of the animal, may be permanently altered by small lesions in the brain-stem. In human neurology the descriptive work of the early French clinicians, of the Queen Square school, and of Goldstein and others is now being followed by the work of teams of specialists concerned with the behaviour and feelings of people subjected to brain injuries and operations. Here the experimental work of Penfield in Canada, and the clinical observations of Zangwill and of Critchley in this country and Hécaen in France are examples.

Neurological Study

Hess, Bremer, and more recently Magoun studied the effects of section of the mid-brain on the isolated cerebral hemispheres, the blood-supply of which was intact. Magoun, in a logical series of papers, has shown that interruption of a comparatively small area of the brain-stem near the aqueduct will produce changes in the electrical activity of the brain consisting in episodic rhythms like those seen in the sleeping animal. Conversely, stimulation of the same area will abolish the spontaneous rhythmic electrical activity. When these lesions are produced the animal becomes inactive and apathetic, and assumes a state resembling stupor in man. The striking discovery is that such a small lesion—which does not produce any apparent change in the sensory or motor pathways—can so profoundly affect the whole behaviour of the cerebral hemispheres. This observation was made in man early in the century when Gordon Holmes reported the somnolence of patients with lesions in the upper part of the mid-brain. Geoffrey Jefferson ten years ago emphasised the importance of brain-stem lesions in producing unconsciousness with head injuries; and in the last few months several papers have appeared, one by Michael Jefferson, bringing together groups of patients in whom there has been disorder of behaviour without an apparent lesion of the brain.

I have a case of a doctor's father who had been confused for three weeks and who had, when I saw him, eye signs suggesting a small lesion in the mid-brain. I admitted him to the National Hospital for study and there he was in a state of stupor. He would lie in bed motionless without any spontaneous activity of any sort. He would be painfully stimulated without response and yet when questioned he would answer with apparent insight and intelligence. We were unable to demonstrate significant reduction in any form of sensation and his voluntary movements were normal. He remained in this odd condition (which is so well known to psychiatrists, and ignored by others) until some weeks later, after increasing coma, he died. The brain was found to contain a single small secondary deposit of a bronchogenic carcinoma in the midline of the mid-brain, without hydrocephalus and without any other secondary deposit in the brain or elsewhere.

Thus the whole of this intelligent professional man's response to his environment was modified and ultimately disintegrated by a tiny lesion of the brain-stem. A case of this sort must surely be disturbing to those who look entirely to the cerebral hemispheres for an explanation of changes in purposive behaviour.

The Silent Areas

In a general way the activity of the brain can be divided into its receptive and executive aspects, the second being ultimately dependent on the first. All movement is, of course, an executive activity, but so is thought; and it is interesting to speculate on the relation of the physiological mechanisms resulting in thought to those resulting in movement. Here I wish to exclude

discussion upon thought and to confine myself to feeling and temperament. There is no difficulty in considering a *reflex* movement as a response to a stimulus and I cannot see any great difficulty in thinking of *purposive* movement as a response to a more elaborate stimulus. Here the stimulus may be a simple perceptual one or it may be a more elaborate conceptual one involving in its central integration changes which induce more complex feelings, including emotions. The immediate social scene with its wealth of stimuli produces a response—admittedly a modifiable one—in the individual.

I would like to emphasise the parallel between the receptive and executive aspects of the reflex pattern of the nervous system, seen in primitive sensation and movement and those of more complex forms of feeling and behaviour. What I do depends on what I perceive. The perception may lead to a highly elaborate conception, but there can be no doubt that purposive behaviour is determined by my perception both exteroceptive and proprioceptive—outside and within. A moment's thought makes it clear that the sensations within us are not confined to those usually discussed by the physiologist or the neurologist. They include emotions, which differ from common and special sensations in two important respects—they continue after the stimulus has ceased and they cannot be located to any special part of the body; nevertheless they are sensations with appropriate motor accompaniments and I see little reason why their neurophysiological basis cannot be considered in the same way as that of the more simple forms of sensation.

Mood can also be considered in the same way. Mood is less clearly related to a stimulus than is emotion. It persists longer and, although often recognised, it cannot be localised. Temperament involves mood and it affects movement. The ultimate products can be considered as attributes of personality. Although those complex feelings which we call emotions and moods cannot be so easily and so precisely studied as the more transient forms of sensory response, I think they concern the experimental physiologist and neurologist who has the training and insight to make man his experimental animal. Just as the local onset of sensory epileptic disturbances was initially related to a local disorder of brain function, an attempt should be made in special cases to relate periodic disorders of emotion, mood, or social behaviour to brain damage. An instrument is available here in epilepsy, particularly of the kind loosely called psychomotor.

Psychomotor Epilepsy

In this sort of epilepsy sensations are experienced which are elaborate and are caricatures of those felt in normal life. When movements take place they are coördinate and once more are a travesty of normal movement. Being coördinate they seem to have purpose. In the simpler sensory forms there is disturbance of the integration of feeling so that a limb may feel larger or the body shape distorted. When the disturbance is at a higher level of integration there may be disorder of the way the person feels about himself or about what he perceives. Visual or auditory hallucinations may be elaborate and have emotional accompaniment or content. These are seen particularly with a lesion of the temporal lobe of the brain. Their character is epitomised in a contemporary lyric which, like the temporal-lobe attack, begins:

> "I hear music when there's no one there,
> I smell blossom when the trees are bare,
> All day long I seem to walk on air,
> I wonder why?"

Disturbances on a more elaborate plane of conceptual integration may alter the way a person feels about himself or his environment.

An engineer has attacks due to a lesion of one temporal lobe of the brain, and before he loses consciousness he gets a sensation of depersonalisation as though part of him were outside himself. The first time he had an attack he was considering a problem in $^1/_{16}$ths of an inch and he suddenly had a strange feeling that he was 1 and $^1/_{16}$th. He felt that if the $^1/_{16}$th left the 1 (himself) an attack would take place. This feeling, which is meaningless to a normal person, but which was a disturbance of conceptual integration, then occurred and a convulsion followed.

Similar bizarre distortions of conceptual integration of feeling may involve special sensations, as in the organised hallucinations I have already mentioned. These may be very complex and involve several related modalities of brain function, like the schoolgirl who feels that she sees and hears people saying frightening things to her, while the visceral accompaniments of fear precede a fit. When the discharge is in the more highly integrated areas of the cortex, the hallucination may have a meaning, as in this girl, but it may also have some relation to previous events.

A schoolboy felt he was being persecuted by a schoolmaster. This boy also had epilepsy with a temporal focus in his electro-encephalogram and before each fit he had a strange feeling of unreality and detachment associated with a visual hallucination which was vivid though not well remembered afterwards. It was of a scene in the middle of which was the head of a man identified by him as the schoolmaster, not through recognition of the features but through the emotional train accompanying the attack which led to a convulsion. The hallucination, the emotional accompaniment, and the convulsions ceased with anticonvulsants, without psychotherapy or removal from his form.

Special sensations may be linked to emotional experiences in elaborate ways like this. Sometimes a hallucination is fearful, sinister, or menacing. At other times the patient describes a sense of great elation. Everyone interested in epilepsy has met people who have attacks in which they feel they can see someone behind one shoulder; and when this phenomenon occurs it seems always to be accompanied by a feeling of paranoia, a hallucination being directed at the patient or even speaking to him as in the two examples quoted.

Auditory hallucinations in epilepsy are particularly liable to be accompanied by sensations of this kind.

One young woman with a progressive temporal lesion had convulsions with small attacks which through the weeks had progressively consisted in vertigo, a buzz, a rhythmic buzz, then a buzzing tone, music, later music with words, later still words directed at her, and finally words associated with an unnatural fear. This chain of events was accompanied by a feeling of unreality, her environment receding. She herself had become quite remote and retarded. A large astrocytoma was found in the middle of the right temporal lobe and Mr. Wylie McKissock removed all the lobe except the upper temporal convolution. She still has attacks but in them she has a sense of rotation without any of the succeeding phenomena. Presumably the part of the brain which produced the other hallucinations, including that of fear, had been removed.

Epileptic Emotions

Attacks in which there are elaborate common or special sensations, sometimes accompanied by emotions, have been mentioned. Isolated emotional disturbances may also occur as evidence of local epileptic discharges, and it is interesting to study the way these spread and to relate them to the site of the lesion or electrical discharge in the same way as may be done in the more usual cases of jacksonian epilepsy.

Fear is commonly experienced when epileptic discharges arise in the middle of the temporal lobe, but other emotions such as anger, misery, horror, jealousy, and suspicion are described from time to time. More pleasant emotions are uncommon, but they include a sense of satisfaction, of completeness (as of a job well done), and of elation. Some of the emotions involving close interpersonal relationships such as affection, love, or hate, seem to be absent, as are other personal ones

such as pride. This inequality of emotional experiences in epilepsy is, however, found in the more usual sensory epilepsies where such sensations as a joint movement and pain are rare.

Moods and Compulsive Thoughts in the Epileptic State

There are unusual cases, of which I have studied six in detail, in which complex epileptic states are accompanied by mood disorder, but in all of them the disturbance has been depression—the mood which is most readily induced by any other physical disorder. When what we might consider an hallucination of mood of this kind arises, it seems to be accompanied by hallucinations of special sense and of emotion related in content to the mood. At the same time compatible compulsive thoughts may arise.

Purposive Behaviour in Epilepsy

In temporal-lobe epilepsy, movements, even when simple, are coördinate and therefore seem to be purposive, so that a man who flexes his finger is said to be beckoning or who moves his tongue on his lips is said to be licking. All degrees of complexity of movement may be encountered, and the more complex the more purposive it seems to be. Furthermore, in the more complex epilepsies there may be some link in the attack with previous experience, or with the stimulus of the environment. It is not a very big step to take from studying this sort of case to that most perplexing borderland between epilepsy and psychopathic behaviour which is exercising such workers as Denis Hill at the Maudsley Hospital. The association of pathological or electrical lesions of the anterior parts of the temporal lobe with aggression in psychopaths and habitual criminals is now well enough known, and recently Ostrow in New York found electrical changes accompanying changes in affect in an abnormal obsessional. This leads me to mention the complex disorders of their relationship with society in other abnormal people who have electrical disturbances in the temporal lobes. The neurologist can consider the conceptual difficulty that these people have in much the same way as he studies parallel disturbances in the conception of the environment in subjects with parietal-lobe lesions. As topographical disorientation is a conceptual disturbance of the spatial environment, so also the distortion of feeling in the psychopath is a more complex conceptual disturbance relating to his animate environment. The environmental determinants of his abnormal feelings are, however, particularly evocative of an emotional response.

Having led the argument through a series of examples and through levels of complex feeling and behaviour to that approaching totality, I would like briefly to mention a case which illuminates this last level.

An officer in Burma had severe multiple penetrating injuries to the right temporal lobe followed by local infection. For weeks he was in an abnormal state, thought to be hysterical, in which everything he thought or experienced seemed to have happened before. He became difficult and aggressive, and he was able to describe his irritability, his excessive temper, and his persistent worrying over trifles. He also had epileptic attacks with elaborate disturbances of feeling. He had failed in his previous administrative post not because there was impairment of intellect but because of his difficulty in dealing with people.

He was studied very fully in the National Hospital and was sent back to work, on anticonvulsants, for a year. The epileptic disturbances ceased but his abnormal feelings towards other people and his aggresive behaviour continued. Recently the whole of the affected part of the right temporal lobe was excised by Mr. McKissock, and he has returned to his executive employment with a personality which, as far as can be judged by interviews with his wife and his employers, is similar to that before his injuries. Psychometric and psychiatric study undertaken before and after operation also show that since removal of the disordered part of the brain there has been a major alteration in his temperament and personality.

BENIGN GASTRODUODENAL DISORDERS TREATED BY BILLROTH-I GASTRIC RESECTION

EVERETT J. SCHMITZ
M.D. Minnesota
INSTRUCTOR IN SURGERY

HENRY N. HARKINS
M.D. Rush
PROFESSOR OF SURGERY

HORACE G. MOORE
M.D. Johns Hopkins
INSTRUCTOR IN SURGERY

HILDING H. OLSON
M.D. Oregon
INSTRUCTOR IN SURGERY

UNIVERSITY OF WASHINGTON, U.S.A.

From the Department of Surgery, University of Washington School of Medicine, and the King County Hospital, Seattle, Washington

SUBTOTAL gastrectomy is the most widely used treatment for benign gastroduodenal conditions not amenable to medical therapy. The techniques generally used are various modifications of the original Billroth-I and Billroth-II operations. In the Billroth-I operation (Billroth 1881) gastro-intestinal continuity was restored by anastomosis of the remaining proximal stomach to the duodenum. The Billroth-II operation, first done by Billroth in 1885, was planned as a two-stage operation: a gastrojejunostomy was to be done as the first stage, with distal gastrectomy to follow at a later date; but the patient tolerated the first stage so well that the second stage was completed before the abdomen was closed (Von Hacker 1885).

Because surgeons often found difficulty in satisfactorily approximating the large-calibre gastric remnant to the smaller duodenum, and because of frequent fatalities from leakage at the anastomosis, the Billroth-I operation rapidly lost favour, and the Billroth-II operation came into steadily wider use. Schoemaker's (1911) method of excising the lesser curvature and eliminating the disproportion between the two segments did much to overcome the difficulty of gastroduodenal anastomosis. However, most surgeons were still prejudiced against the Billroth-I operation, which did not again come into general use.

Recently there has been a revival of interest in this operation, and we present here data which may be of interest.

Since the normal physiology of the gastro-intestinal tract depends at least partially on gastroduodenal continuity, it seems reasonable to assume that the derangements following removal of a major portion of the stomach might be lessened by restoration of that continuity. Experimental evidence supports this assumption (Day and Webster 1935, Kolouch et al. 1945, Merendino et al. 1945a and b, Pincus et al. 1942, Storer et al. 1952, Wollaeger 1950).

Our experience with the Billroth-I operation at King County Hospital began in 1948. This operation came into such favour with us that it has almost com-

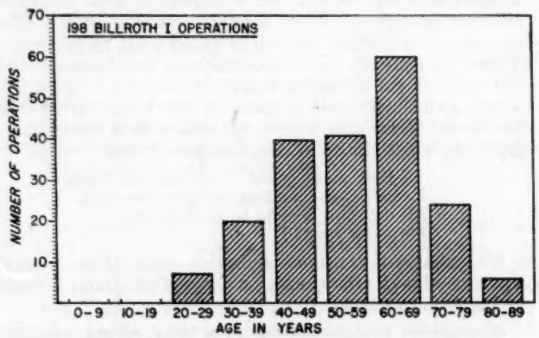


Fig. 1—Age-distribution of patients by decades.

pletely supplanted the Billroth-II operation at this hospital. We have analysed the available data on our series of Billroth-I operations done for benign gastroduodenal conditions so that the information thus derived may be compared with published reports of other series of gastrectomies done by either method.

Material

This report is based on our experience of 198 patients with benign gastroduodenal disorders on whom subtotal gastrectomy *ad modum* Billroth I was done between January, 1948, and June 30, 1953.

180 patients were charity cases admitted to the surgical service of the King County Hospital. These included a high percentage of nutritional and geriatric problems and alcoholics. 18 cases were private patients operated on by one of us (H. H. O.).

There were 156 males and 42 females, a ratio of 3·7 to 1. There were 184 whites and 14 non-whites. This is in keeping with the racial composition of the population in this area.

The average age was 55·5 years: 66% of these patients were aged 50 or more, and 45·4% 60 or more. The age-distribution by decades is indicated in fig. 1. None of the reports published hitherto concerns so high a proportion of patients with subtotal gastrectomy in the upper age-groups.

Indications for Operation

4 resections were done to eradicate diagnosed gastric polyps; the rest were done for gastric, duodenal, and marginal ulcers. Gastric ulcers per se were considered an adequate reason for resection because of the high incidence of malignancy in these lesions (Cain et al. 1952). Many of these patients had been briefly and intensively treated on the medical service of Dr. Wade Volwiler without healing before transfer to us. Indications for gastric resection in cases of duodenal ulcer were hæmorrhage, obstruction, chronicity, intractability, perforation, and pain. Economic reasons were the determining factor in 1 case, that of a wage-earner whose ulcer remained controlled on medical management only so long as he did not return to work. Another resection was done on a young woman whose symptoms were easily alleviated by dietary means but who became very obese as a result and promptly developed recurrence when a weight-reduction régime was instituted. 1 patient with dumping syndrome after a Billroth-II operation was operated on again, a Billroth-I operation being done. 6 other cases were operated on because of marginal ulcer symptoms, including 3 patients with Billroth-II resections and 3 with gastrojejunostomy.

DISTRIBUTION OF VARIOUS INDICATIONS FOR GASTRIC RESECTION

Indication	No. of cases
Gastric ulcer	51 (25·7%)
Acute bleeding	33 (16·6%)
Recent or recurrent bleeding	48 (24·2%)
Obstruction	42 (21·2%)
Persistent pain	20 (10·0%)
Chronicity	39 (19·6%)
Intractability	37 (18·6%)
Previous perforation	45 (22·7%)
Acute perforation	15 (7·5%)
Stomal ulcer	6 (3·0%)
Polyps*	4 (2·0%)
Economic	1 (0·5%)
Obesity	1 (0·5%)
Post-gastrectomy dumping	1 (0·5%)

*4 patients were diagnosed preoperatively as having gastric polyps; at operation it was found that 3 patients had gastric polyps and 1 had severe hypertrophic gastritis.

The accompanying table contains detailed information of the incidence of the various indications. Many of these patients presented more than one indication.

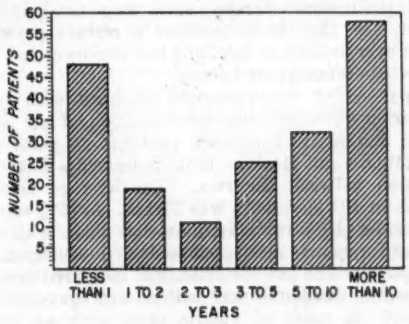


Fig. 2—Duration of symptoms.

Duration of Symptoms

5 patients could not say accurately how long their symptoms had lasted. 48 (24%) had symptoms for less than a year, 55 (28%) for from one to five years, and 90 (45%) for more than five years (fig. 2).

Associated Pathological Conditions

Pathological conditions other than that for which the operation was done, and of sufficient severity to cause concern, were present in 91 (46%) of these patients. The most common of these was severe chronic alcoholism (39), cardiovascular disease (32—a reflection of the age of many of our patients), advanced pulmonary disease (4), cerebrospinal syphilis (4), other mental disease (3), renal disease (2), senility (2), leukæmia (1), diabetes (1), epilepsy (1), portal hypertension (1), and obesity (1).

Preoperative Preparation

Patients undergoing elective gastric resection were assessed jointly by internist and surgeon and then kept in hospital for several days before operation if necessary. Special attention was paid to the correction of anæmia, hypoproteinæmia, and abnormal cardiac and renal function. Whenever pyloric obstruction was present, continuous intragastric decompression was maintained for seventy-two hours before operation. The choice of anæsthetic agent and the method of its administration were determined in consultation with the anæsthetists.

Technical Considerations

A prime consideration was an adequate resection, and only after this had been done was the type of anastomosis decided on.

The factors in determining the extent of resection were: (1) the surgeon's estimate, (2) the weight of the resected specimen, (3) the measurements along both curvatures of the resected specimen, and (4) the measurement of patterns of both the remaining stomach and the excised specimen. These patterns are made of a large strip of cottonoid (the material used by neurosurgeons as hæmostatic pledgets) cut at the operating-table to fit the anterior surface of the compressed segment of stomach left in situ (Moore and Harkins 1952). After the operation another pattern is similarly made, at the side-table, of the anterior surface of the compressed unopened segment of stomach removed. The areas of these two patterns are then determined by a polar planimeter (an engineering instrument which will measure the size of any flat surface area no matter how irregular). The per cent resection is determined in turn from the relationship between these two areas.

Of these methods the surgeon's estimate and the cottonoid patterns were of greatest value. The rather wide variation in the size of stomachs made accurate estimations from the weights and curvature measurements difficult. We agree with Visick (1948) that the value of estimates alone can be accepted only after watching

individual surgeons operate. Some surgeons, in America at least, say they have resected a certain percentage without ever looking at anything but the lower end of the segment of stomach left behind.

Comparison of the surgeon's estimate with precise information obtained after determination of the area of resected and residual stomach patterns by polar planimetry (Moore and Harkins 1952) indicated a fairly close correlation between the two. The average measured resection in 104 specimens was 71·1%. A 75% resection was considered desirable for duodenal ulcer, with somewhat less for gastric ulcers, particularly in the aged. The 104 cases in which the resection was measured consisted of 69 cases of duodenal ulcer with an average resection of 73%, and 35 cases of gastric ulcer with an average resection of 66%.

The average weight of 179 operation specimens, after all the fat had been trimmed off, was 194·4 g.

As our experience of the Billroth-I operation accumulated, we found that we could complete an increasingly greater percentage of resections in this manner. Our method of mobilising the duodenum by making a generous Kocher incision along the lateral peritoneal reflection and then mobilising the duodenum medialwards with the head of the pancreas, until the retroduodenal course of the vena cava was exposed, made possible a high anastomosis without tension and at the same time brought into view the distal part of the common bile-duct, otherwise a common cause of concern. Palpation of the papilla of Vater within the duodenum indicated that this structure was far enough away from the site of transection in nearly every instance to cause no concern. The average measured distance in 87 cases in which this was done was 5·1 cm. (range 2·0–8·5 cm.).

Duodenal ulcers were removed, when present, in all but 3 cases. Excision of posterior ulcers was facilitated since 1951 by using the method of Alfred A. Strauss (personal communication 1951), in which, as a first step, the anterior wall of the duodenum is incised transversely. With the ulcer directly visible, the posterior duodenal wall is raised into the field of operation by the forefinger beneath the head of the pancreas, and is incised just distal to the ulcer with a sharp scalpel; and both the posterior wall and the ulcer bed with the stomach attached are then shaved from the pancreas from right to left. No clamps are used on the duodenum, the lumen being occluded with a gauze sponge after division.

The width of the flattened duodenum was determined and was usually found to be about 5 cm. All but the most proximal one or two vasa brevia on the greater curvature were divided, and on the lesser curvature the left gastric artery was divided. After a high resection a Schoemaker-type closure of the residual stomach was then done, leaving a 5-cm. stoma at the greater curvature portion of the line of resection. Gastroduodenostomy was not attempted unless the stomach and duodenum could be approximated without tension. If it appeared that force would be necessary to accomplish the anastomosis, end-to-end gastroduodenostomy was abandoned, the duodenal stump was closed, and either a gastrojejunostomy or a von Haberer/Finney end-to-side gastroduodenostomy was done.

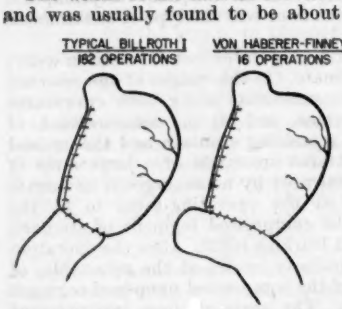


Fig. 3—Diagrammatic representations of Billroth-I operation and of von Haberer/Finney modification thereof.

The von Haberer/Finney operation was also of value where the duodenum proximal to the papilla of Vater was so adherent or deformed that end-to-end anastomosis was unwise, and in the rare instances in which duodenal ulcer was left in situ. This technique was used in 16 of our 198 cases (fig. 3).

Anastomosis was accomplished by a two-row technique —an inner row of interrupted silk or, occasionally, of continuous fine chronic catgut approximating the mucosa, and an outer row of interrupted silk approximating the seromuscular layers without much inversion. The stoma thus created would usually accommodate two fingers and was without evidence of stricture or spur formation.

Whenever dissection of an ulcer from the pancreas was necessary, a double-lumen rubber sump drain was placed down to the area through a separate stab wound and left until drainage was less than 15 ml. in twenty-four hours (usually three days).

Blood-loss was estimated by weighing the used sponges at short intervals, and transfusions were given accordingly.

Postoperative Care

Intragastric suction was maintained postoperatively until peristalsis was heard. Fluid and electrolyte requirements were met, antibiotics were given as indicated, and coughing was encouraged. Patients were helped out of bed and walked about on the first postoperative day. A liquid diet in from six to eight feedings was given as soon as the gastric suction was discontinued, and this was increased to a full soft diet over a period of four or five days.

The average postoperative stay in hospital was 11·9 days. Because of the considerable number of transient and homeless people in this series, the postoperative period of stay in hospital was longer than would otherwise be necessary.

Pathology

The pathological diagnoses based on the excised specimens were duodenal ulcer or cicatrisation secondary to healed ulcer in 120 cases (60·6%), gastric ulcer in 53 (26·7%), both gastric and duodenal ulcer in 11 (5·5%), marginal ulcer in 4 (2%), polyps in 3* (1·5%), gastritis in 2 (1%), dilatation of afferent loop in 2 (1%), and pyloric hypertrophy in 1 (0·5%). No abnormal pathology was found in 2 (1%).

Complications

Postoperative complications developed in 42 patients (21%); 6 of these patients died—a mortality-rate of 3%. Nineteen different kinds of complication were observed in 42 patients; some had multiple complications.

Pulmonary complications were most frequent, being observed 17 times: atelectasis in 12 cases, and pneumonia in 5.

Cardiovascular complications were observed in 8 cases: pulmonary emboli in 2, cerebral hæmorrhage in 2, phlebothrombosis in 1, myocardial infarction in 1, acute heart-failure in 1, and massive mesenteric occlusion in 1, the last 3 being fatal.

Minor *wound infections* were observed in 4 cases, and a major infection with dehiscence in 1.

Intestinal obstruction developed in 3 cases; in 2 of them small-bowel intubation and suction decompression promptly relieved the condition.

Paralytic ileus developed in 1 case. Exploration yielded no evidence of obstruction, and the patient died of bronchopneumonia, wound infection, and peritonitis on the twenty-eighth postoperative day.

Urinary-tract infections were observed in 2 cases, and *renal failure* in 1.

*Of the 4 patients diagnosed preoperatively as having gastric polyps 1 was found at operation to have severe hypertrophic gastritis.

A young alcoholic female, who had undergone emergency resection for acute perforated duodenal ulcer, suffered *perforation of the remaining stomach pouch* on the fifth postoperative day because of erosion of the anterior stomach wall by the tip of the nasogastric suction tube. She was promptly operated on, the perforation was closed, and after several days wound dehiscence, gastroduodenal fistulæ, bronchopneumonia, and delirium tremens developed. After several attempts to close the fistulæ, she was finally discharged some eight months after admission in good condition with the fistulæ closed. A serum-protein determination done five days after the first operation had revealed severe hypoproteinæmia (3·9 g. per 100 ml.).

In other patients 1 *transfusion reaction* with hæmolytic crisis and 1 *subhepatic abscess* developed.

Complications attributable to the Billroth-I operation included 2 cases of *stomal obstruction*. One developed early and was undoubtedly due to œdema, because it subsided after four days' gastric decompression; the second developed three months after the operation and necessitated a plastic operation on the gastroduodenal juncture. Transitory mild *hæmatemesis* developed in 2 cases soon after operation. 1 temporary *fistula* developed, probably at the anastomosis. This patient had an air-vent suction sump drain in place when the fistula developed on the third postoperative day. Bile-stained fluid was recovered for six days. The patient has had no further difficulty. We are certain that his life was saved by this drain. 1 patient had severe *diarrhœa* for a week after postoperative feedings were begun. This cleared up rapidly and has not recurred. Inasmuch as we have observed all these complications after Billroth-II operations we cannot describe them as being peculiar to either method.

The 6 deaths were all in patients aged 63 or more; 3 of them were aged more than 70. 4 of the patients who died had long-standing cardiovascular disease, which was the undisputed cause of death of 3 of them. 2 operations were done because of massive bleeding, and the patients were very poor risks at the time of operation. At least 3 of the 6 deaths were probably unavoidable and not a direct result of the operation. The operative mortality was 3%. If 35 additional patients, not included in this analysis, on whom a 50% Billroth-I resection and a complete vagotomy were done, are considered in computing the mortality, the rate drops to 2·6%. The fatal cases were as follows:

Case 1.—A woman, aged 77, with four years' history of ulcer, had a chronic bleeding gastric ulcer with associated arteriosclerosis, hypertension, and myocardial insufficiency. A Billroth-I gastric resection was done on Jan. 26, 1949. The blood-supply to the transverse colon was compromised during surgery. A colostomy was done. The patient died of myocardial infarction, bronchopneumonia, and peritonitis on the twenty-first postoperative day.

Case 2.—A man, aged 67, with two years' history of ulcer, had bleeding from gastric and duodenal ulcers. A Billroth-I gastric resection was done on Jan. 3, 1952. Persistent paralytic ileus developed. At exploratory laparotomy on Jan. 12, 1952, no obstruction was found. The patient died of bronchopneumonia, wound infection, and localised peritonitis on the twenty-eighth postoperative day.

Case 3.—A man, aged 63, with ten years' history of ulcer, had a chronic intractable duodenal ulcer with pyloric stenosis, and associated hypertension and arteriosclerosis. A Billroth-I gastric resection was done on April 22, 1953. The patient died of cerebral infarct thirty hours after the operation.

Case 4.—A man, aged 66, with thirty-one years' history of ulcer, had massive bleeding from a duodenal ulcer. An emergency Billroth-I gastric resection was done on Nov. 16, 1952. The patient died of bronchopneumonia and renal failure on the third postoperative day.

Case 5.—A man, aged 74, with seven years' history of ulcer, had a recent recurrent bleeding gastric ulcer with complete pyloric obstruction and long-standing valvular heart-disease. He died of sudden acute right heart-failure on the seventh postoperative day.

Case 6.—A man, aged 75, with six months' history of gastric ulcer, had repeated bleeding, complete pyloric obstruction, and severe arteriosclerosis with previous peripheral embolic phenomena. A Billroth-I gastric resection was done on June 29, 1953. He died of massive mesenteric occlusion eleven days after operation.

Follow-up

Of the 192 surviving patients 178 were available for personal follow-up by one of us. The duration of follow-up was short in many instances, 48 patients being followed up for three months or less, and 109 patients for no more than a year.

The interviewer paid special attention to weight changes, "dumping" symptoms, recurrence of ulcer symptoms, pain, diarrhœa, and general well-being. Note was made of the patient's own assessment of the result of the operation as excellent, satisfactory, or poor. The patients were examined, and subjected to radiography and laboratory tests if necessary. Our own classification of "excellent" indicates patients free from symptoms, personally satisfied with the results of their operation, and in no way incapacitated because of it; "satisfactory" were those who have minimal to mild dumping or other slight symptoms thought to be related to the operation but no persistent ulcer symptoms; and the designation "poor" applies to those who are incapacitated as a result of the operation or have persistent ulcer symptoms, and it also includes the operative deaths.

We define "dumping" as a syndrome in which any or all of the following postprandial symptoms occur: sweating, subjective flushing or unpleasant warmth, nausea, palpitation, or explosive diarrhœa aggravated by food and relieved by lying down.

Weight Changes.—Accurate information about weight changes was unavailable in 18 cases. Of the remaining 160 patients 55 (34%) lost weight, 68 (43%) gained weight, and 37 (23%) remained unchanged postoperatively. Thus 66% of these patients either maintained or gained weight after their gastric resection. The figures of 43% of patients who gained weight compares favourably with representative figures for series of patients after Billroth-II resections—e.g., 27% (Moore et al. 1953) and 10% (Muir 1949).

Dumping.—3 patients could not give reliable information about symptoms because of senility and insanity. Of the remaining 175 patients 64 (36·5%) gave evidence of dumping at some time after the operation. This was rated as mild in 51, moderate in 11, and severe in only 2. 24 patients lost their dumping symptoms within the first year after operation, most of them within the first three months. At the time of most recent interview the prevalence of dumping was 22·8%.

Ulcer Symptoms and Recurrence.—6 patients developed symptoms suggesting recurrent ulcer. Radiography and gastroscopy were suggestive in 4 cases: in each case the ulcer was thought to be in the residual gastric pouch along the lesser curvature. An exploratory operation was done in 3 of these, and in 2 of them no ulcer was found. These were early in the series, when routine early postoperative radiography was not done. The suspected ulcers were due to irregularity of the stomach wall along the Schoemaker closure line. Since early postoperative radiography has been made routine, this difficulty has been eliminated because base-line pictures showing any irregularity of the suture line are available. On exploration in 1 patient a small shallow gastric crater was found just proximal to the line of anastomosis. A 2nd patient had radiological and gastroscopic evidence of gastric ulceration, but four months later these tests were negative and the patient had no symptoms. The 5th and 6th patients are uncoöperative, being alcoholics who complain

bitterly of their symptoms but have steadfastly refused repeated offers of investigation and admission to hospital; we therefore entertain serious doubts about the validity of their complaints. Our rate of proved recurrence is 1% or ½% according to what criteria are used.

Diarrhœa.—Persistent diarrhœa was observed in 6 patients. It was mild and non-disabling in 5 but severe and disabling in 1, who was greatly relieved by the elimination of all fruits from her diet and by the ingestion of a detergent with her meals.

Anæmia.—Only 1 case of anæmia was observed—in a white man, aged 51, operated on two years ago, who is currently being investigated because of macrocytic hypochromic anæmia.

Classification of Results.—A definite statement of the degree of satisfaction with the operation was obtained from 166 patients: 124 (75%) graded their result as excellent, 35 (21%) as satisfactory, and 7 (4%) as poor. Thus 96% of these patients were satisfied with the results of the operation (patient's estimate). Using our previously defined criteria we were able to classify 109 (60%) of the followed cases as excellent, 58 (32%) as satisfactory, and 15 (8%), including the 6 deaths, as poor. Thus, 92% are classified as satisfactory or better (surgeon's estimate).

Discussion

The early criticism of the Billroth-I operation—that leakage took place at the "critical angle" formed by the juncture of the two suture lines—has been overcome by modern technique and observation of the principles of careful serosal apposition, preservation of duodenal blood-supply, and avoidance of tension. Inasmuch as the currently popular Hofmeister/Billroth-II operation produces a similar "critical angle" this criticism no longer seems entirely valid. The other major criticisms are the unsuitability of the Billroth-I operation for duodenal lesions and the difficulty of adequate resection and anastomosis without tension on the suture line. In our own experience 66% of Billroth-I operations were done for duodenal ulcer, and in all except 3 of them the pathological tissue was removed, sometimes necessitating the sacrifice of a considerable portion of the proximal duodenum. This and the fact that an average quantitatively measured 71% resection was done in 104 cases (including both duodenal and gastric ulcers) refute the last two criticisms. In 69 resections for duodenal ulcer the average measured resection was 73%, and in 35 resections for gastric ulcer 66%. We completed most of our total gastrectomies by œsophagoduodenostomy, and it seems logical to assume that if the duodenum can easily be anastomosed to the œsophagus it can even more easily be sutured to the stomach after an entirely adequate subtotal resection. We have done only 2 Billroth-II operations in the last two and a half years.

The accuracy of the measurements made at operation is attested by additional measurements made at necropsy on 1 patient. At operation the pattern of the residual stomach measured 50 sq. cm., and that found at necropsy 57·5 sq. cm., the calculated error in extent of resection resulting from this difference being 2%.

Danger of damage to the common bile-duct is not appreciably greater than obtains in closure of the duodenal stump in a Billroth-II operation. In fact the extensive mobilisation of the duodenum in the Billroth-I operation helps to render the bile-duct visible. The papilla of Vater is farther from the pylorus than one would suspect and, with a little practice, can usually be easily located by palpation. When in doubt, we have not hesitated to open and probe the common bile-duct from above, thus positively identifying it throughout its course.

The Billroth-I operation possesses some very real physiological advantages. Restoration of gastroduodenal continuity is important to the optimal flow of bile and pancreatic juices and to the proper mixing of the food with these secretions. This undoubtedly is the reason why patients with gastroduodenostomy lose less fat in their stools than do patients with gastrojejunostomy (Wollaeger 1950). The duodenal mucosa has been shown experimentally to be more resistant to the action of acid gastric secretions than that of the jejunum (Kolouch et al. 1945, Merendino et al. 1945a and b). There is also experimental evidence that indicates that the duodenal mucosa may regulate to some extent the acid secretion of the stomach (Day and Webster 1935, Pincus et al. 1942, Storer et al. 1952).

Technical advantages of this type of gastric resection include the following:

(1) The entire operation is done in the supramesocolic portion of the abdomen, handling of the bowel is minimised, and any contamination that may take place is kept localised.

(2) Because the anastomosis requires little more time than would careful closure of the duodenal stump, and since the gastrojejunal anastomosis need not be done, an important saving in operating-time is made. Speed that is also consistent with safety and good workmanship is a virtue.

(3) Elimination of the duodenal stump removes a major cause of concern and of all too common a disaster.

65% of our patients maintained or exceeded their preoperative weight. Rauch (1952) states that only 132 (19%) of 699 patients who had undergone a Billroth-II operation gained or maintained stable weights. In our experience (Moore et al. 1953) the Billroth-I cases did significantly better in this regard than did the Billroth-II cases.

The dumping syndrome is liable to follow either operation. Reported incidences of dumping vary from 2% (Garlock and Lyons 1949) to 75% (Muir 1949). Our 37% lies midway between these two extremes. By applying the same strict criteria to our Billroth-II series we obtained a slightly higher figure—44% (Moore et al. 1953). Rauch (1952) states that by careful questioning he elicited a history of dumping symptoms in more than half his Billroth-II patients. Only 13 of our patients had more than mild or occasional dumping symptoms, and in only 2 did significant disability result. Muir (1949) reported that in 10% of his cases dumping was severe. Hope for these patients lies in the fact that 37% of our patients with dumping have lost their symptoms and 23% of the remainder are improving. Bohmansson (1926) reported that 6% of his Billroth-I and 24% of his Billroth-II patients had "intestinal disturbances." Our 6% incidence of persistent diarrhœa resembles his figure closely.

The mortality-rate following gastric resection for benign lesions should not exceed 1–3% (Eastman and Cole 1949, Maingot 1948). Our mortality-rate of 3% is at the upper limit of acceptability according to this criterion. In view of the average age and of complications in our patients this mortality is probably not excessive. It is more an indication of the age and socio-economic stratum of society from which our material is drawn than an indictment against the operation. The average age of 55½ (45% of the patients were aged 60 or more) undoubtedly played a part. We are not aware of any other reported series involving so large a proportion in this age-group. In addition, deaths following resection done as an emergency operation for massive hæmorrhage are included in our calculations, whereas not all surgeons do so (Tanner 1951, Visick 1948).

Conclusions and Summary

198 gastric resections by the Billroth-I technique for benign gastroduodenal conditions are reviewed.

66% of the patients had duodenal ulcer.

An average proved 71% resection was done in 104 cases.

The mortality-rate was 3% in a group of patients of whom 45% were aged 60 or more.

Ulceration of the gastric pouch took place in 1%.

The post-gastrectomy dumping syndrome was manifested in 37% of these patients.

By our criteria, in 92% of the 184 cases the result was at least satisfactory.

The Billroth-I operation, as done by us, is applicable to most cases with duodenal lesions.

Adequate resection is made possible by this technique.

The operation produces a high percentage of good results and satisfaction of the patients.

The Billroth-I operation has certain advantages which suggest that it should be more widely used.

REFERENCES

Billroth, T. (1881) *Wien. med. Wschr.* **31**, 161.
Bohmansson, G. (1926) *Acta chir. scand.* **60**, suppl. 7.
Cain, J. C., Jordan, G. L. jun., Comfort, M. W., Gray, H. K. (1952) *J. Amer. med. Ass.* **150**, 781.
Day, J. J., Webster, D. R. (1935) *Amer. J. dig. Dis.* **2**, 527.
Eastman, W. H., Cole, W. H. (1942) *Arch. Surg.* **59**, 768.
Garlock, J. H., Lyons, A. S. (1949) *Surgery*, **25**, 352.
Kolouch, F. jun., Castellanos, M. M., Dubus, A. T. S., Baronofsky, I., Wangensteen, O. H. (1945) *Proc. Soc. exp. Biol., N.Y.* **58**, 275.
Maingot, R. (1948) Abdominal Operations. 2nd ed., New York.
Merendino, K. A., Lannin, B. G., Kolouch, F. jun., Baronofsky, I., Litow, S. S., Wangensteen, O. H. (1945a) *Proc. Soc. exp. Biol., N.Y.* **58**, 226.
— Varco, R. L., Litow, S. S., Kolouch, F. jun., Baronofsky, I., Wangensteen, O. H. (1945b) *Ibid*, p. 222.
Moore, H. G. jun., Harkins, H. N. (1952) *Surgery*, **32**, 408.
— Schlosser, R. J., Stevenson, J. K., Harkins, H. N., Olson, H. H. (1953) *Arch. Surg.* **67**, 4.
Muir, A. (1949) *Brit. J. Surg.* **37**, 165.
Pincus, I. J., Thomas, J. E., Rehfuss, M. E. (1942) *Proc. Soc. exp. Biol., N.Y.* **51**, 367.
Rauch, R. F. (1952) *Surgery*, **32**, 638.
Schoemaker, J. (1911) *Arch. klin. Chir.* **94**, 541.
Storer, E. H., Oberhelman, H. A. jun., Woodward, E. R., Dragstedt, L. R. (1952) *Arch. Surg.* **64**, 192.
Tanner, N. C. (1951) *Edinb. med. J.* **58**, 279.
Vislck, A. H. (1948) *Lancet*, **1**, 505.
Von Hacker, V. (1885) *Arch. klin. Chir.* **32**, 616.
Wollaeger, E. E. (1950) *Postgrad. med. J.* **8**, 251.

FLUID AND ELECTROLYTE EXCHANGE IN PATIENTS WITH BURNS

J. P. BULL, M.A., M.D. Camb.
N. W. J. ENGLAND, M.B. Birm.

From the Medical Research Council Industrial Injuries and Burns Research Unit, Birmingham Accident Hospital

A PROMINENT feature of the inflammation caused by burns is the increased permeability of the local blood-vessels. The loss of fluid from these vessels is evident in the blisters and œdema which develop. The amount of fluid lost varies with the area of the burn; part of it passes into the extracellular space, and part passes completely out of the body as exudate. During recovery the œdema fluid is reabsorbed.

The electrolyte content of both exudate and œdema fluid is similar to that of extracellular fluid, and this determines the main electrolyte requirement. Tissue damage leads to further loss of sodium into the cells, with a corresponding escape of potassium into the extracellular fluid (Scudder 1940, Fox and Baer 1947, Winfield et al. 1951), which it has been suggested may cause potassium intoxication. Conversely, the finding of negative potassium balances on certain régimes of treatment has suggested that after a few days there is danger of potassium deficiency (Fox et al. 1952).

A point which has only recently been emphasised (Bland 1952, Moore and Ball 1952) is that in burnt patients with renal retention the administration of large amounts of fluid and salt will bring about high positive balances which may be dangerous. This apparent failure of normal adjustment by the kidney raises the possibility that during the period of retention the renal response may be of little value in indicating fluid and salt requirements, and that other criteria are needed to guide treatment.

To explore these problems, especially those aspects important for therapy, we have studied a series of cases of severe burns treated by well-tried methods. The clinical state of these patients, with injuries sufficiently severe to endanger life, made it impossible to ensure uniformly complete investigations in all the cases and limited the permissible range of experiments. We have therefore investigated the sequence of electrolyte changes in treated burnt patients and tested the effects of certain variations in their treatment.

Materials and Methods

33 patients, aged from 13 months to 82 years with burns involving 12–69% of the body-surface were studied in detail. They were admitted to the Burns Unit between October, 1951, and December, 1952. It was impossible to study all consecutive cases; representative examples as regards age and severity were therefore selected. In addition to these 33 cases we have less complete data regarding others.

Urine was collected from the time of admission over 8-hour periods for the first 3 days and over 24-hour periods thereafter. All the female patients had indwelling catheters throughout the period of shock. The following urinary constituents were estimated:

(1) Sodium and potassium by flame photometry ('E.E.L. Direct Reading Instrument').

(2) Chloride by potentiometric silver-nitrate titration (Kolthoff and Van Berk 1927).

(3) Ammonia, phosphate, sulphate (total, organic, and inorganic), urea, creatinine, creatine, uric acid, and total nitrogen by standard methods.

(4) Total solutes by determination of the freezing-point using a special thermometer reading from − 2° to + 1°C in steps of 0·01°C.

In some cases the total cations in the urine were estimated with a cation-exchange resin previously charged with H+ and titration with standard soda after urine had passed through the resin. There was good agreement between the sum of individual cation estimations and the total estimate based on the exchange resin.

In early cases sporadic, and in later cases daily, samples of blood were taken for the following estimations:

(1) Sodium and potassium by flame photometry.

(2) Chloride by mercuric-nitrate titration (Schales and Schales 1941).

(3) Bicarbonate (after saturation with carbon dioxide at partial pressure of alveolar air) by Conway diffusion method or by Van Slyke constant-volume manometer.

(4) Urea by urease method, and in some cases by xanthydrol precipitation.

(5) Total serum-proteins from total serum-nitrogen (micro-Kjeldahl).

In 7 cases daily serial eosinophil-counts were made. The blood was taken between 10 and 11 A.M., and the eosinophils were counted in Fuchs-Rosenthal chambers, after being stained with eosin-acetone.

Oral and parenteral fluid was measured, and frequent checks of its sodium, potassium, and chloride content were made, so that the intake of water and electrolytes could be fairly accurately estimated and crude balances of intake against urinary output calculated. These balances were only valid while the patients were taking a fluid diet.

In some cases estimates of red-cell volume (measured with P^{32} or by the Ashby technique), plasma volume (Evans blue), and daily hæmatocrit and hæmoglobin were available from other studies.

ROUTINE TREATMENT

On admission the hæmatocrit reading was taken as a guide to the severity of plasma loss, and either dextran or reconstituted plasma was given initially to correct hæmoconcentration. Some patients continued through

TABLE I—MEAN FLUID INTAKE IN FIRST 48 HOURS OF TWO GROUPS OF PATIENTS COMPARED WITH AMOUNTS RECOMMENDED BY OTHER AUTHORS

—	Cases 13, 14, 16, 17, 18: mean area burnt 33%	Cope and Moore (1947)	Wallace (1951)	Evans et al. (1952)
Group I (children aged 4–9 yr.):				
Colloid (blood, plasma, or dextran) with saline (litres)	2·7	2·0	1·0	2·0
Non-colloid non-saline (litres)	2·6	4·5	4·0	2·0
Saline (litres)	1·5	2·5	1·0	2·0
Total (litres)	6·8	9·0	6·0	6·0
—	Cases 31, 32, 33: mean area burnt 30%			
Group II (adults aged 60–82 yr.):				
Colloid (blood, plasma, or dextran) with saline (litres)	3·0	5·0	3·1	2·3
Non-colloid non-saline (litres)	6·5	4·5	4·0	7·0
Saline (litres)	0·5	4·5	3·1	2·3
Total (litres)	10·0	14·0	10·2	11·6

the period of shock on this régime and received blood-transfusions later, when the Hb fell to 80% or less; other patients had a blood-transfusion during the period of shock in an amount calculated to raise the Hb to 20–40% above the average normal, and further plasma was then given as required to prevent subsequent hæmoconcentration. For the purpose of this study we refer to blood, plasma, and dextran collectively as colloid fluids.

Measured oral fluids consisting of flavoured glucose water, and, in some cases, sodium lactate were given in frequent small amounts. The volume of oral fluid was regulated in the early cases by the amount that the patients would accept, but for later cases the volume was controlled at a rate of about 2 litres a day.

The sweetened oral fluid was supplemented on the 2nd or 3rd day by egg, milk, and milk-protein mixture given either by mouth or by gastric drip. In the case of less severe burns rapid return to full mixed diet was encouraged, but the patients with large burns continued on the milk mixture for a further period, until they could take a fully adequate diet 10–14 days after injury. In a few cases we added potassium chloride to the milk feed because of a low and falling serum-potassium level, and in some other cases we tried the effect of extra amounts of sodium chloride on the serum level and urinary excretion of sodium. We also investigated the renal response to sudden increase in the water load.

It may be of interest to compare the fluid intakes in the first 48 hours, calculated from the formulæ recommended by other workers (Cope and Moore 1947, Wallace 1951, Evans et al. 1952), with the mean quantities given to two series of our patients—a group of 5 children, aged 4–9 years, with an estimated burnt area 30–35%, and 3 adults, aged 60–82, with an estimated burnt area 25–35% (table I). This table shows that there is a general similarity in quantities and proportions of fluids given, though our younger patients received rather more colloid fluids and the adults less saline solution than would be indicated by the formulæ.

Results

FLUID INTAKE AND VOLUME OF URINE

Table II summarises the intakes of colloid and non-colloid fluids and the volumes of urine for the first 3 days after injury, the cases being grouped according to age and severity of burns (24 cases were included in the mean values; the remainder of the series were omitted because of incomplete data). It will be seen that most of the colloid fluid was given within the first 24 hours, and that the amount given was greater in the case of the larger burns. Similarly, rather more was given to adults than to children, though the difference was not so great as would be obtained from the use of a surface-area/body-weight formula. The non-colloid fluid, mostly oral fruit drinks, supplied about 2 litres a day to the children and rather more to the adults.

An outstanding feature of the fluid balances during the first 3 days was, in all the groups, an oliguria of 0·5–1·0 litre of urine a day. The factors determining the volume of urine during this period are not fully understood, but in our cases variations in intake of colloid fluid seem to have had little effect on the output of urine. Table III shows that, in two groups of patients with burns of comparable severity and with relatively constant intakes of non-colloid fluid, a twofold greater intake of colloid fluid was not associated with a higher output of urine. It will also be noted in table II that although the children received a proportionately greater quantity of colloid fluid they did not produce any greater volume of urine than did the adults. That the intake of sodium had similarly little effect in determining the volume of urine in these circumstances is suggested by table IV, in which groups of burnt patients given different quantities of sodium are compared. The two

TABLE III—INTAKE OF COLLOID FLUID AND OUTPUT OF URINE DURING FIRST 48 HOURS IN 5 CASES (AREAS 28–44%, MEAN 33%)

—	Case no.	Area of burn (%)	Intake of colloid fluid (litres)	Volume of urine (litres)	Intake of non-colloid fluid (litres)
Group A	13	30	1·4	1·8	4·4
	18	35	2·0	0·9	5·4
	10	28	2·2	0·8	4·6
	Mean values	31	1·87	1·17	4·8
Group B	14	30	3·4	1·1	4·2
	19	44	4·0	1·0	5·8
	Mean values	37	3·7	1·05	5·0

TABLE II—MEAN DAILY INTAKE OF FLUIDS AND OUTPUT OF URINE DURING FIRST 3 DAYS AFTER BURNING (24 CASES)

Age-group (yr.)	Days after burning	Area of burn 10–19%					Area of burn 20–29%					Area of burn 30% or more				
		No. of cases	Fluid intake (litres)			Output of urine (litres)	No. of cases	Fluid intake (litres)			Output of urine (litres)	No. of cases	Fluid intake (litres)			Output of urine (litres)
			Colloid	Non-colloid	Total			Colloid	Non-colloid	Total			Colloid	Non-colloid	Total	
0–14	1	4	1·1	2·4	3·5	0·8	4	1·1	2·3	3·4	0·6	8	2·6	2·9	5·5	0·6
	2		0·1	2·1	2·2	1·2		0·3	1·7	2·0	0·7		0·4	3·1	3·5	0·8
	3		0·4	1·2	1·6	0·5		0·0	1·9	1·9	0·6		0·0	2·1	2·1	1·0
15 or more	1	3	0·4	2·1	2·5	0·6	2	1·7	3·0	4·7	0·5	3	5·4	2·9	8·3	0·5
	2		0·0	2·3	2·3	0·7		0·0	2·9	2·9	0·5		0·4	4·1	4·5	0·4
	3		0·0	2·2	2·2	0·9		0·0	2·7	2·7	0·6		0·1	3·9	4·0	0·6

TABLE IV—INTAKE OF SODIUM AND VOLUME OF URINE DURING FIRST 48 HOURS AFTER BURN

Group	Low intake of sodium					High intake of sodium				
	Case no.	Area burnt (%)	Intake of sodium (m.eq.)	Intake of fluid (litres)	Output of urine (litres)	Case no.	Area burnt (%)	Intake of sodium (m.eq.)	Intake of fluid (litres)	Output of urine (litres)
< 30 %	25	15	73	5·2	1·0	27	18	188	4·8	1·3
	4	12	73	3·6	1·3	12	20	280	5·2	1·0
	9	20	78	4·4	2·2	5	14	399	6·2	2·4
						10	28	469	6·8	0·8
Mean		16	75	4·4	1·5		20	334	5·8	1·4
30 % or more	13	30	381	5·8	1·8	18	35	829	7·4	0·9
	16	35	528	5·5	0·9	15	34	949	10·1	1·3
	21	63	588	9·1	1·1	17	35	991	7·4	1·1
	20	50	614	7·0	0·6	19	44	1047	9·8	1·0
	28	54	631	7·0	2·3	22	69	1775	16·4	2·7
	14	30	662	7·6	1·1					
Mean		44	567	7·0	1·3		43	1118	10·2	1·4

groups who received much more sodium had no greater output of urine during the first 48 hours after injury, even though they were given more fluid than the patients who received less sodium.

The volume of urine produced in the first 48 hours in relation to intake of non-colloid fluid is shown in fig. 1. If 1·0–1·5 litres a day is allowed for normal extra-renal loss of fluid, and colloid fluid is assumed to supply exudate, the patients with smaller burns respond to a higher intake of fluid by a greater output of urine. In contrast to this, the patients with larger burns produce a relatively smaller volume of urine, and excretion of more than 1 litre a day is associated with very high positive fluid balances. This "apparent" retained fluid is very much greater than the amount required for loss through skin and lungs. If allowance is made for these extrarenal losses, the results suggest that only about a quarter of the remaining fluid is excreted as urine. This means that, in the case of a patient with a large burn who is given adequate colloid fluids, an intake of about 5 litres of non-colloid fluid in the first 48 hours will produce 0·5–1·0 litre of urine a day, and that, because of the danger of overloading the extracellular space, this

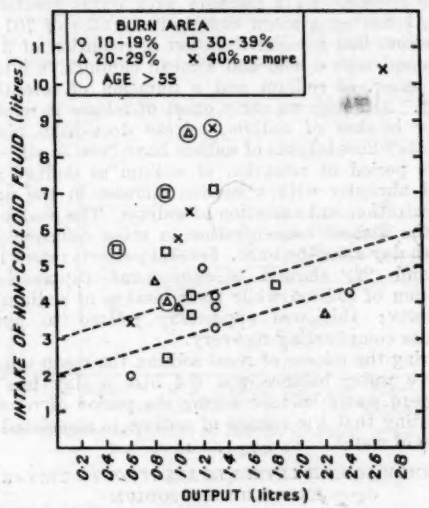


Fig. 1—Intake of non-colloid fluid and output of urine in first 48 hours after burn.

may be a clinically satisfactory compromise between intake and excretory requirements.

INITIAL LOW VOLUME OF URINE

In none of our cases was there the sustained anuria sometimes described in burnt patients. The urine, though either moderate or low in volume, was quite well concentrated. In the first 3 days the solute concentration, measured by depression of the freezing-point, ranged from 215 milliosmols per litre at a urine flow of 2·5 ml. a minute to 1174 milliosmols per litre at a flow of 0·6 ml. a minute, with a mean concentration, in 157 8-hour samples from 21 patients, of 712 milliosmols per litre, or about twice the molarity of plasma filtrate.

Another indication of good excretory function is given by the urea-concentration factor (U/P), which in 64 determinations in 15 cases during the first 21 days after the burn ranged from 9·1 to 90·0, with a mean of 44·0. The sodium-concentration factor (P/U) rose to very high values in all the cases during the retention of sodium, and in none of them was there evidence of deficient reabsorption of sodium.

Mean values for blood-urea and urinary urea in 14 cases show that the mean highest blood-urea level during the first 4 days after the burn was 40 mg. per 100 ml. for patients with burns less than 30% and 60 mg. per 100 ml. in patients with larger burns. Patients with these larger

TABLE V—ONSET OF RELEASE OF WATER IN RELATION TO SEVERITY OF BURN

Area of burn (%)	No. of cases	Mean day of release of water	Mean cumulative water balance at time of release (litres)	Mean daily water balance during retention
0–19	4	5·0	+ 7·6	+ 1·5
20–29	3	5·0	+ 8·1	+ 1·6
30–39	6	3·7	+ 7·4	+ 2·0
40 or more	6	4·3	+12·1	+ 2·8

The day of release of water is that on which daily volume of urine was greater than 1 litre in adults and 0·8 litre in children.

burns excreted a higher total of urea than did those with burns less than 30%.

In those cases in which the blood-urea level was raised there was a rapid return to normal values following increased excretion of urea during the subsequent period of raised volume of urine. In cases 13 and 22 the high blood-urea level was sustained during phases of high nitrogenous intake and excretion; this suggests that the rise of blood-urea level was related to increased production of urea rather than to diminished renal function. This concept is further supported by data from a patient, not in the series, in whom the protein intake was reduced experimentally and the previously high blood-urea level rapidly returned to normal. It therefore appears that, at a rate of urine flow between 0·5 and 1·0 litre a day, there may be some retention of nitrogen particularly in patients with the larger burns, but it is not severe and is rapidly corrected as the volume of urine increases.

Most of our patients did not show any obvious period of diuresis following the initial phase of oliguria, and table v shows the mean time at which the daily volume of urine increased to 1 litre or more in adults or to 0·8 litre in children. This may be taken as the time of onset of release of water, and the table shows the relationship between this and the severity of the burn. In patients with burns of less than 30% water was released on the 5th day, and in those with larger burns on the 4th day. That the time of release of water is related to the intake of fluid is suggested by the fact that cases 13, 14, and 16 had a mean daily intake of 2·3 litres of fluid, with mean day of release of water 2·3, compared with 3 other children with rather smaller burns

TABLE VI—MEAN DAILY INTAKE, OUTPUT, AND APPARENT BALANCES OF SODIUM FOR FIRST 3 DAYS AFTER BURN IN 16 CASES

Days after burn	Area of burn 10–19%				Area of burn 20–29%				Area of burn 30–39%				Area of burn 40% or more			
	No. of cases	Intake (m.eq.)	Output (m.eq.)	Balance (m.eq.)	No. of cases	Intake (m.eq.)	Output (m.eq.)	Balance (m.eq.)	No. of cases	Intake (m.eq.)	Output (m.eq.)	Balance (m.eq.)	No. of cases	Intake (m.eq.)	Output (m.eq.)	Balance (m.eq.)
1	3	71	32	+39	3	214	33	+181	6	564	59	+505	4	764	60	+704
2		41	3	+38		62	11	+ 51		159	45	+114		242	38	+204
3		33	4	+29		73	11	+ 62		103	33	+ 70		67	7	+ 60

(cases 4, 11, and 12), who had a mean daily intake of only 1·4 litres of fluid and day of release of water 7 or later. Patients with larger burns also release fluid earlier with higher intakes of fluid, but they require a relatively greater amount of fluid than do patients with smaller burns.

After the release of water there is a return to normal renal regulation of fluid balance, and additional loads of fluid are rapidly and quantitatively excreted. This was confirmed by normal response to water-tolerance tests.

SODIUM METABOLISM

Table VI shows mean figures of intake and urinary excretion of sodium for the first 3 days after the burn; the groups are divided according to the severity of the burns. There was a fairly regular pattern of sodium excretion, consisting of a decrease from a moderate amount on the 1st day to scanty excretion on the 3rd, the values in patients with burns more extensive than 30% being somewhat higher than in patients with smaller burns. The intake of sodium on the 1st day was much higher in the patients with larger burns but, in spite of this higher intake, the excretion of sodium was only slightly increased. Part of this high apparent positive sodium balance is attributable to losses in exudate.

The intake and urinary excretion of sodium during the first 3 days in relation to the severity of the burn are shown in fig. 2. During the first 24 hours there was moderate urinary excretion of sodium despite a relatively high intake in most cases, but in the subsequent 48 hours the excretion of sodium became very scanty when the intake was reduced. We call this the period of low sodium excretion or renal sodium retention, and define it as the period during which the urinary sodium is less than 20 m.eq. a day. Fig. 2 shows that all but 4 patients began to retain sodium by the end of the 3rd day. The delay of about a day in the onset of retention in patients with larger burns (table VII) may be related to the higher intake of sodium by these patients, as fig. 3 shows. For similar sizes of burn a higher initial intake of sodium is associated with a delay in onset of retention. In patients with smaller burns much less additional sodium apparently is required to produce a given delay than in patients with larger burns; the sodium requirements of patients with smaller burns are presumably less, leaving more sodium to be excreted by the kidneys.

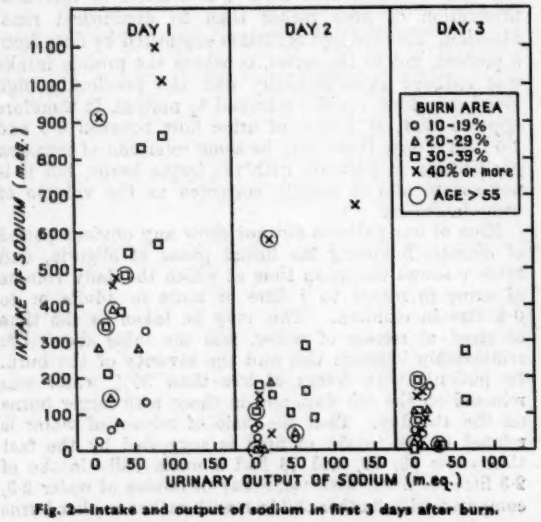


Fig. 2—Intake and output of sodium in first 3 days after burn.

That the low excretion of sodium during the initial period can be increased somewhat is seen from table VIII. In two groups of patients with less severe burns and with low and high intakes of sodium an increase of 259 m.eq. in mean intake of sodium was associated with an increase of only 52 m.eq. in excretion of sodium. In patients with more severe burns an increase of 551 m.eq. in mean intake of sodium was associated with an increase of only 88 m.eq. in excretion of sodium. There is thus a pronounced retention of sodium associated with both large and small burns, producing a positive sodium balance. Within the range of intake studied the amount of this positive balance is determined by intake, urinary excretion being small and only slightly influenced by intake.

TABLE VII—MEAN DAY OF ONSET AND DURATION OF SODIUM RETENTION

Area of burn (%)	Mean day of onset of retention	Mean duration of retention (days)	Mean cumulative intake of sodium from burning to end of retention (m.eq.)
10–29 (13 cases)	0·7	5·4	395
30 or more (9 cases)	1·7	3·0	1189

The rather shorter duration of retention of sodium in the patients with larger burns (table VII) was associated with a higher cumulative intake of sodium up to the time of its release. Of 8 patients with burns greater than 30%, 3 having a mean cumulative intake of 701 m.eq. of sodium had a mean duration of retention of 3 days, compared with 5 who had a mean cumulative intake of 1245 m.eq. of sodium and a duration of retention of 1 day. Although an early onset of release is related to higher intakes of sodium, release does take place in patients whose intakes of sodium have been small.

The period of retention of sodium as defined above ended abruptly with a sudden increase in the urinary concentration and excretion of sodium. The peak output and the highest concentration in urine occurred about the 5th day after the burn. Several patients (cases 13, 20, 21, and 22) showed a subsequent suppression of excretion of sodium while their intakes of sodium were moderate; this was apparently related to pyrexial episodes complicating recovery.

During the release of renal sodium the mean apparent positive water balance was 0·4 litre a day less than the mean water balance during the period of retention, suggesting that the release of sodium is associated with release of water.

SERUM-SODIUM LEVELS IN RELATION TO URINARY EXCRETION OF SODIUM

The serum-sodium levels of 14 patients are summarised in fig. 4. Apart from the patients with the highest

intakes of sodium, initial values were normal. The mean levels in all the groups fell during renal retention, but not much below normal values. During the release of sodium the levels returned towards normal. Fall in the serum-sodium level showed no clear relation to the sizes of the burn and were not prevented by high sustained intakes of sodium. The rise during release led to a maximum serum-sodium level at about the same time as the peak in urinary sodium concentration and output, but release frequently occurred at a time of low serum-sodium concentration and there is little evidence in our results to suggest that release is dependent on a return of serum levels to normal.

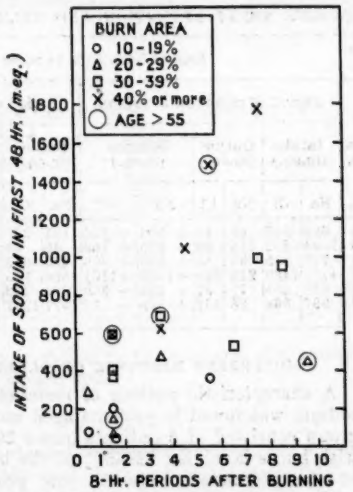


Fig. 3—Time of onset of retention of sodium in relation to intake of sodium in first 48 hours after burn.

RELATIVE SODIUM AND CHLORIDE BALANCES

Table IX gives details of cumulative intakes, urinary output, and apparent balances of sodium and chloride in 9 patients during renal retention and release of sodium. Consistent with the fact that there is more sodium than chloride in extracellular fluid, the positive balance of sodium was greater than that of chloride during retention. If the intake consisted largely of sodium chloride, the urinary chloride exceeded the urinary sodium. This relation was reversed if the sodium intake greatly exceeded that of chloride (cases 15 and 19). During the release of sodium the output of sodium was greater than that of chloride, as would be expected from the composition of extracellular fluids.

At the end of release the over-all cumulative sodium balance was greater than the chloride balance; and, if by this time the formation and resorption of œdema were complete, the positive sodium and chloride balances would represent the loss in exudate and sweat not included in the balance calculations. For a group of 5 patients with burns of greater area than 40% the cumulative sodium balances were equivalent to a mean extra-renal loss of 7·2 litres of extracellular fluid during 8 days after the burn. Similar calculation based on the chloride balance made the estimated loss 7·4 litres in the same period.

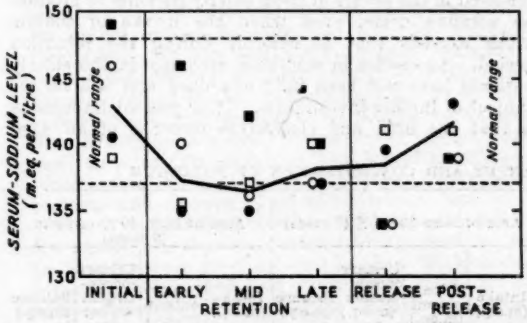


Fig. 4—Mean serum-sodium levels in relation to phases of retention and release of sodium:

	Mean area	Mean sodium intake in first 48 hours (m.eq.)
○ Cases 9, 25, 26	17%	51
● Cases 10, 11, 27, 29	24%	314
□ Cases 16, 20, 28, 32	44%	591
■ Cases 18, 22, 30	50%	1025

URINARY pH

During the period of retention all the patients who had not been transfused with either blood or plasma but had received saline containing solutions such as dextran had an acid urine, with pH less than 6·0. This was consistent with the greater relative requirement of sodium in the formation of œdema and exudate and the excretion of the excess chloride in the urine. When stored blood or plasma was transfused, there was a much greater intake of sodium relative to chloride; and the excess sodium, after satisfying œdema and exudate requirements, was excreted in the urine, with the result that the urine became alkaline. These changes in pH can be related to the ratio of chloride to sodium in the urine. Where this ratio was greater than unity, as in patients receiving either dextran or saline solution, the highest pH was 6·0 or less. The administration of either plasma or blood caused the ratio to fall and the pH to rise. As soon as the intake of sodium ceased to be in relative excess, the ratio of chloride in the urine became greater than 1·0, and the urine pH fell below 6·0.

At the time of release, when the excretion of sodium was greater than that of chloride, the urine became for a short time more alkaline. From the day before until the day after release there was a mean rise in urine pH of 0·7 (range +0·1 to +1·0), with a change in mean chloride/sodium ratio from 2·5 before release to 0·9 after release.

TABLE VIII—EXCRETION OF SODIUM DURING FIRST 48 HOURS IN RELATION TO INTAKE OF SODIUM

Group	Low intake of sodium					High intake of sodium				
	Case no.	Area of burn (%)	Intake of sodium (m.eq.)	Urinary sodium (m.eq.)	Apparent balance* (m.eq.)	Case no.	Area of burn (%)	Intake of sodium (m.eq.)	Urinary sodium (m.eq.)	Apparent balance* (m.eq.)
<30%	25	15	73	25	+ 48	27	18	188	72	+ 116
	4	12	73	7	+ 66	12	20	280	16	+ 264
	9	20	78	37	+ 41	5	14	399	120	+ 279
						10	28	469	80	+ 389
	Mean	16	75	23	+ 52	Mean	20	334	72	+ 262
30% or more	13	30	381	24	+357	18	35	829	110	+ 719
	16	35	528	59	+469	15	34	949	170	+ 779
	21	63	588	32	+556	17	35	991	131	+ 860
	20	50	614	50	+564	19	44	1047	110	+ 937
	28	54	631	58	+573	22	69	1775	212	+1563
	14	30	662	129	+533					
	Mean	44	567	59	+508	Mean	43	1118	147	+ 971

* Exudate and sweat losses not deducted.

POTASSIUM METABOLISM

The mean daily intake, output, and apparent balance of potassium in the first 6 days after the burn are shown in table X, the patients being divided into four groups according to the severity of the burns. There was a moderate negative balance of 10–30 m.eq. a day during the first 3 days, associated with a low intake, but neither the negative balance nor the urinary output of potassium bore any apparent relation to the severity of the burn. The mean urinary potassium levels fell gradually from about 70 to 30 m.eq. per litre by the 6th day, and this fall was similar for all sizes of burn. Since the volume of urine increased during this period, the daily excretion

TABLE IX—RELATIVE SODIUM AND CHLORIDE BALANCES DURING RENAL RETENTION AND RELEASE OF SODIUM

Case no.	Area of burn 10–39 %: Period of retention of sodium — Intake (m.eq.) Na	Intake (m.eq.) Cl	Output (m.eq.) Na	Output (m.eq.) Cl	Balance (m.eq.) Na	Balance (m.eq.) Cl	Period of release of sodium — Intake (m.eq.) Na	Intake (m.eq.) Cl	Output (m.eq.) Na	Output (m.eq.) Cl	Balance (m.eq.) Na	Balance (m.eq.) Cl
4	130	133	21	45	+ 109	+ 88	22	27	92	77	− 70	− 50
12	298	252	41	48	+ 251	+204	12	13	98	79	− 86	− 66
13	381	345	24	40	+ 357	+305	993	1157	893	921	+100	+236
32	1110	972	67	124	+1043	+848	196	149	352	53	−156	+ 96

Case no.	Area of burn 40 % or more: Period of retention of sodium — Intake (m.eq.) Na	Intake (m.eq.) Cl	Output (m.eq.) Na	Output (m.eq.) Cl	Balance (m.eq.) Na	Balance (m.eq.) Cl	Period of release of sodium — Intake (m.eq.) Na	Intake (m.eq.) Cl	Output (m.eq.) Na	Output (m.eq.) Cl	Balance (m.eq.) Na	Balance (m.eq.) Cl
20	683	365	49	10	+ 634	+ 355	191	239	212	157	− 21	+ 82
19	1094	832	114	66	+ 980	+ 766	46	48	35	24	+ 11	+ 24
21	720	535	35	35	+ 685	+ 500	446	643	372	445	+ 74	+198
22	1775	1480	212	249	+1563	+1161	690	745	448	379	+242	+366
28	699	351	77	51	+ 622	+ 300	204	232	171	118	+ 33	+114
33	987	864	28	107	+ 959	+ 75	1577	1907	1238	1123	+ 67	+156

of potassium remained remarkably steady at 20–40 m.eq. a day.

It will be seen that the cumulative negative potassium balance was not high in any of the groups. Apparent correction took place at about the 3rd or 4th day, but the actual zero balance, allowing for losses in exudate, was probably a day or more later. After restoration of the positive balance, a moderate increase in intake was readily reflected in increased excretion.

The mean serum-potassium levels at different periods in the patients for whom we have data are shown in table XI. There is no suggestion that the levels were related to the sizes of the burns. The slight fall between the first and the second 3-day periods is paralleled by a decrease in the urinary potassium. The return to higher values in the third period probably reflects the restoration of a positive balance.

The highest cumulative negative balance (case 22) was 149 m.eq. during the first 4 days, and during the same period the serum-potassium level fell from 4·8 to 3·8 m.eq. per litre. An increase in intake of potassium during the next 4 days was followed by a positive balance of 304 m.eq. and a rise in the serum-potassium level to 6·5 m.eq. per litre on the 9th day. It seems that during negative balance potassium is lost from the cells, and during positive balance the cellular potassium is replaced.

Case 16 showed the highest initial serum-potassium level (of 6·7 m.eq. per litre) and this was sustained during the next 10 days despite scanty excretion. Cases 25 and 29 were the only other patients with serum-potassium levels as high as 6·0 m.eq. per litre; all the other patients had normal values initially.

2 patients developed low serum-potassium levels. In case 10 the level fell from 4·1 m.eq. per litre on day 3 to 2·6 m.eq. per litre on day 7, during an attack of severe diarrhœa. In case 13 the level fell to 3·3 m.eq. per litre on day 5 when he had a cumulative negative potassium balance of 61 m.eq., but it rose rapidly when the intake of potassium was increased. There were no obvious symptoms or signs of potassium deficiency in either case, but case 10 had coexistent septicæmia and died on day 7; we do not know whether the potassium deficiency contributed to his death.

DIFFERENT RESPONSE OF OLDER PATIENTS

A characteristic pattern of metabolism of water and sodium was found in patients aged more than 55. This group consisted of 5 patients (cases 29–33), aged 55–82, with burns involving 22–45% of the body-surface. One of the differences between this group and younger patients with similar burns was a greater tendency to retain fluid. This is shown in fig. 1 and in further detail in table XII, which gives the mean intakes of fluid by the older patients in relation to their outputs of urine. These can be compared with similar data for young patients in table III. The mean duration of renal retention of water was 2 days longer in the older patients than in the others, and this delayed onset of release of water occurred despite greater relative intakes of fluid.

Associated with this greater retention of water the retention of sodium was increased, compared with the other patients (table XII), but not to so great an extent as the retention of water. The duration of renal retention of sodium was prolonged, and in 2 elderly patients (cases 29 and 32) the urinary excretion of sodium was suppressed, given moderate intake concurrent with low serum-sodium levels. These findings suggest an exceptionally high requirement of sodium, which is probably reflected in the failure of these elderly patients to produce an alkaline urine, even when the intake of sodium much exceeds that of chloride during the retention period. Anomalies in acid-base exchange in the elderly patients have not been fully examined and will be the subject of further investigation. Our present impression is that the fluid and electrolyte response of an aged

TABLE XI—MEAN SERUM-POTASSIUM LEVELS DURING FIRST 9 DAYS (M.EQ. PER LITRE)

Days	Area of burn 10–19 % (6 cases)	Area of burn 20–29 % (4 cases)	Area of burn 20–39 % (3 cases)	Area of burn 40 % or more (3 cases)
1–3	5·2	4·8	5·7	5·0
4–6	5·1	4·3	4·3	4·3
7–9	4·9	4·3	4·7	5·2

TABLE X—MEAN DAILY INTAKE AND URINARY OUTPUT AND CONCENTRATION OF POTASSIUM

Day	Area of burn 10–19 % (5 cases): Intake (m.eq.)	Urinary output (m.eq.)	Urinary concentration (m.eq. per litre)	Balance (m.eq.)	Area of burn 20–29 % (4 cases): Intake (m.eq.)	Urinary output (m.eq.)	Urinary concentration (m.eq. per litre)	Balance (m.eq.)	Area of burn 30–39 % (7 cases): Intake (m.eq.)	Urinary output (m.eq.)	Urinary concentration (m.eq. per litre)	Balance (m.eq.)	Area of burn 40 % or more (6 cases): Intake (m.eq.)	Urinary output (m.eq.)	Urinary concentration (m.eq. per litre)	Balance (m.eq.)
1	13	30	60	−17	10	34	60	−24	26	40	77	−14	28	38	82	−10
2	17	31	78	−14	4	27	47	−23	13	23	73	−10	16	46	58	−30
3	24	23	57	+ 1	16	24	48	− 8	19	27	30	− 8	13	28	44	−15
4	30	29	57	+ 1	25	26	45	− 1	26	28	32	− 2	39	34	36	+ 5
5	31	22	47	+ 9	11	11	26	0	37	29	39	+ 8	59	29	30	+30
6	19	41	40	−22	23	16	28	+ 7	50	31	32	+19	62	33	28	+29

TABLE XII—MEAN INTAKE AND URINARY OUTPUT OF FLUIDS AND SODIUM DURING FIRST 4 DAYS IN PATIENTS AGED MORE THAN 55

Day	Fluids								Sodium					
	Area of burn < 30% (2 cases)				Area of burn > 30% (3 cases)				Area of burn < 30% (2 cases)			Area of burn > 30% (3 cases)		
	Intake (litres)			Urinary output (litres)	Intake (litres)			Urinary output (litres)	Intake (m.eq.)	Urinary output (m.eq.)	Balance (m.eq.)	Intake (m.eq.)	Urinary output (m.eq.)	Balance (m.eq.)
	Colloid	Non-colloid	Total		Colloid	Non-colloid	Total							
1	1·9	3·0	4·9	0·5	3·6	2·9	6·5	0·5	272	26	+246	580	24	+556
2	0·0	2·9	2·9	0·5	0·5	4·1	4·6	0·4	25	17	+ 5	241	8	+233
3	0·0	2·7	2·7	0·6	0·1	3·9	4·0	0·6	15	17	− 2	82	5	+ 77
4	0·0	2·4	2·4	0·8	0·0	4·1	4·1	0·6	33	13	+ 20	176	6	+170

person to burning is similar to the response of a younger person to a more severe burn.

MORTALITY

There were 11 deaths: 3 patients (cases 10, 30, and 31) died within the first week; 1 (case 33) during the second week; and the remainder (cases 15, 17, 20, 21, 22, 29, and 32) during the third week or later. Necropsies were done in all fatal cases except cases 17, 30, and 33.

Of the 3 young children who died 2 (cases 10 and 15), with burns of 28% and 35%, had septicæmia with positive blood-cultures. Septicæmia was the probable cause of death in 2 other patients (cases 22 and 32), and 2 patients (cases 21 and 29) died from pulmonary embolism. Necropsy revealed nephritis in case 29, who died 9 weeks after the burn; in the remaining 4 cases the detailed cause of death was unknown. Of the 3 deaths in the first week after the burn, and therefore most likely to have been associated with faulty fluid and electrolyte management, the cause of 2 was known not to be due to electrolyte imbalance; in the 3rd (case 30) the cause was unknown (this case was unusual in that the patient's intakes of fluids and salt were large and she excreted only small volumes of urine containing but little salt).

It therefore seems that no death was unequivocally attributable to fluid and electrolyte imbalance, although in some cases this could not be excluded as a contributory factor.

Discussion and Conclusions

It is generally accepted that the most important single factor in the treatment of shock from burns is the replacement of plasma lost from the circulation. The aim is to give sufficient fluid to avoid circulatory collapse but not so much as to overload the extracellular space in the special circumstance of raised capillary permeability due to burning. Our patients received about 1 litre of colloid for every 10% of estimated area of body-surface burned, the actual amount in each case being determined by hæmatocrit changes and other clinical features. By most standards our patients appear to have received adequate colloid therapy to maintain a safe blood volume, and in no case in which the blood volume was estimated was an exceptionally small volume found. Some patients received a high proportion of their colloid transfusion as blood; they did not appear to behave differently from patients who received blood about a week later.

The claim that fluid requirement can be assessed from the rate of flow of urine is subject to qualification. Some patients produce good volumes of urine with moderate intake of fluid but we find that there is often severe retention of water during the first 4 days, when only a small proportion of ingested water is excreted by the kidneys. The attempt, therefore, to maintain either a normal or a large volume of urine by a high intake of fluids causes a very high positive fluid balance (Cope and Moore 1947). This intolerance to an increased water load has also been observed in patients after surgical operations (Cooper et al. 1949). Evans et al. (1952) have emphasised the danger of giving excessive fluid in the early stages after a burn, and we have confirmed that a moderate intake of fluid does not lead to cessation of urine formation or marked azotæmia. Even with urine flows of about 0·5 litre a day during the first few days we have not observed retention of non-protein nitrogen in patients with burns involving less than 30% of the body-surface; and, since the moderate retention which takes place in patients with larger burns is not prevented by a relatively high intake of fluids, possibly some nitrogenous retention is inevitable for a short time; this may be partly the result of increased nitrogenous katabolism (Taylor et al. 1943, Walker 1945).

In agreement with our observations on excretory function the work of Haynes et al. (1951) suggests that renal hydrodynamics are within normal limits in patients treated for burns. Since some red cells are destroyed after a burn, our practice of transfusing with plasma to achieve "normal" hæmatocrit values probably undercorrects the blood volume, this may cause retention of sodium and water (Borst 1948). The results of our estimations of red-cell and plasma volumes are consistent with this and further suggest that the release of sodium and water corresponds to the return of the blood volume towards normal. That this is not the only factor is suggested by the fact that several patients who received

APPENDIX—SUMMARY OF PATIENTS STUDIED

Age-group (yr.)	Case no.	Sex	Age (yr.)	Area of burn (% of body-surface)	Full thickness loss (% of body-surface)	Result
0–14	1	M	1½	10	0	Recovered
	2	F	2½	10	0	,,
	3	M	2	14	6	,,
	4	M	4	12	1	,,
	5	F	4	14	13	,,
	6	F	6	19	19	,,
	7	M	1⅝	18	11	,,
	8	F	⅝	25	19	,,
	9	F	7	20	7	,,
	10	M	4	28	15	Died on day 7
	11	F	12	25	18	Recovered
	12	F	4	20	15	,,
	13	M	7	30	26	,,
	14	F	9	30	22	,,
	15	F	2½	34	28	Died on day 15
	16	F	4	35	14	Recovered
	17	F	5	35	30	Died on day 19
	18	F	6	35	25	Recovered
	19	F	6	44	37	,,
	20	F	6	50	50	Died on day 22
	21	M	6	63	60	,, ,, ,, 16
	22	F	14	69	65	,, ,, ,, 17
15–44	23	M	31	19	14	Recovered
	24	M	24	17	13	,,
	25	M	39	15	13	,,
	26	M	27	15	5	,,
	27	M	26	18	0	,,
	28	F	26	54	45	,,
45 or more	29	F	58	25	16	Died on day 67
	30	F	58	45	25	,, ,, ,, 4
	31	F	71	25	20	,, ,, ,, 5
	32	F	60	35	30	,, ,, ,, 18
	33	F	82	30	25	,, ,, ,, 9

relatively large amounts of colloid excreted scanty urine (table III).

More studies of serial changes in blood volume are needed, and there is the further possibility that some other inadequacy of circulation plays a part in the oliguria. Since patients with sustained high sodium intakes have also exhibited oliguria, it is unlikely that a low-salt syndrome is the cause of the intolerance to ingested water (McCance 1935, Leaf and Mamby 1952). Epstein et al. (1951) have shown that in quiet standing, in which there is some redistribution of fluid between the intravascular and interstitial compartments, the volume of the urine is reduced, and the mechanism in this condition and in patients with burns may be similar.

The retention of water coincides with a period of adrenocortical activity (Evans and Butterfield 1951), but oliguria is unlikely to be caused by adrenal activity per se, since cortisone and corticotropin are believed to antagonise antidiuretic hormone and to increase the flow of urine (Lloyd 1952).

Another possible cause of the oliguria might be acute tubular necrosis, such as has been described in some patients with burns (Lucké 1946). This, however, seems unlikely in our patients, because in none of them did the character of the urine suggest an acute tubular lesion, and in only 1 necropsy was there evidence of recent nephritis, and this was not of the lower-nephron type. An explanation of the oliguria more consistent with our findings would be increased activity of antidiuretic hormone, and further studies are in progress to explore this possibility. Whatever its cause, the oliguria appears to be a temporary response to the burn and probably should not be treated by over-zealous therapy with fluids.

The marked retention of sodium and chloride which has often been observed after burns (Cope and Moore 1947, Moore and Ball 1952) has been confirmed in the present series. The urinary excretion bears some relation to the intake of sodium, but during the period of retention only a small percentage of the ingested salt is excreted, and we have found that normal values of urinary output of salt are only obtained at the expense of high positive sodium and chloride balances. During the transfusion period there is a moderate output of sodium, but this is associated with high intake and positive balance of sodium ; and, as soon as the intake of salt is reduced, the urinary concentration and excretion of sodium fall to very low levels. About the 5th day after the burn there is a spontaneous increase in the excretion of sodium without any increase in the intake, and it is followed by an osmotic diuresis lasting about 5 days. In those patients who have had a small intake of sodium the suppression of urinary excretion of sodium is prolonged and the duration and extent of diuresis are reduced. Other workers (Winfield et al. 1951, Fox et al. 1952) have shown that, although, with sustained high intake of salt, the absolute suppression of the urinary excretion of salt is prevented, there is still a very large over-all positive sodium balance. Fox (1944) claimed that, by giving very large amounts of sodium and fluids, he maintained the blood volume without giving colloid. Warren et al. (1943) showed that, in dogs with tourniquet shock, circulation could be maintained by giving massive infusions of saline solution, but the resulting extreme increase of extracellular volume in a burnt patient is likely to be harmful.

We have found that, during the period of retention and low urinary excretion of sodium, there is a considerable fall in the serum-sodium level even in patients on high intakes of sodium. This fall in serum-sodium level during retention has often been observed (Wilson and Stewart 1939, Fox 1944, Moore and Ball 1952, Evans et al. 1952), and Fox (1944) has shown that the level falls even after massive intakes of sodium. Keyser (1948) noted the suppression of urinary excretion of chloride and thought that it was the result of the fall of the plasma-chloride level below the normal threshold. Our results do not support this, since we found that considerable sodium and chloride can be excreted after retention while their levels in the serum are very low. Moore and Ball (1952) have explained the fall of the plasma-sodium level in terms of loss of sodium from the extracellular fluid into the cells ; and, although sodium is known to pass into the cells of damaged tissues (Wilson and Stewart 1939, Lowdon et al. 1939, Fox and Baer 1947, Moore et al. 1948), our evidence suggests that this is unlikely to be the complete explanation.

The fall of plasma-sodium level might reflect a greater relative retention of water compared with sodium. This is known to happen in various conditions, all associated with retention of water and salt and expansion of the extracellular fluid (Peters 1952)—e.g., nephrotic syndrome (Luetscher et al. 1950), congestive heart-failure (Miller 1951), salt-depletion syndrome (McCance 1935), and quiet standing (Epstein et al. 1951). This explanation is supported by the observation, in some cases, of release of water before that of salt, which is followed by a rise of serum sodium level and increased urinary excretion of sodium. We have often seen that, towards the end of the diuresis following the resorption of œdema fluid, the serum-sodium level rises, being associated with increasing urinary concentration and output of sodium, even though the volume of the urine by this time is diminishing. Since there was no increase in intake of sodium, possibly at this time sodium is mobilised from some source such as the cells.

The periods of retention and release of water and salt, defined by our arbitrary levels of urinary excretion, seem to correspond to the periods of formation and resorption of œdema. Various workers (Coller et al. 1945, Elman et al. 1949, Fox et al. 1952) have shown that, during the expansion of extracellular-fluid space, more chloride is excreted than sodium, and that, during the contraction of the extracellular-fluid space, more sodium is excreted than chloride (McCance 1935). This is the urinary pattern that we have observed during the renal retention and release of sodium. Further, during the period of renal release of sodium there is an over-all reduction in the positive fluid balances compared with the period of retention of sodium.

The negative potassium balance, which we have shown in the present series, has been reported by other workers studying burns (Evans and Butterfield 1951, Moore and Ball 1952) and in postoperative surgical conditions (Elman et al. 1949, Evans 1950, Marks 1950, Wilkinson et al. 1950). In the present cases the negative balance was not so large as that previously reported, and was within the range which might be expected from simple deprivation of potassium (Black and Milne 1952, Fourman 1952). It has been suggested that the amount of potassium excreted is related to the severity of the trauma (Winfield et al. 1951, Moore and Ball 1952) but we did not find any clear relation between either the serum-potassium level or the urinary excretion of potassium and either the area or the depth of the burn. In line with this is our finding of normal serum-potassium levels during the first day or two after the burn. This supports the observations of Tenery (1941), though Scudder (1940) and McLean et al. (1947) reported high serum-potassium levels and emphasised the dangers of intoxication by potassium at this stage. The later tendency of the serum-potassium level to fall to low levels we attribute to inadequate intake.

High blood-urea levels have been reported after burns in man (Taylor et al. 1943, Lucido 1940, Walker 1945) and experimental burns in animals (Clark et al. 1944, Glenn et al. 1943). We have only found a temporarily raised blood-urea level during the oliguric phase of patients with the more severe burns, and this has rapidly returned to normal when the volume of urine has become

normal. We did not see in the present series the irreversible azotæmia reported by Taylor et al. (1943).

In considering the biochemical changes in burnt patients it is important to realise the distinction between changes to be expected in laboratory animals or in untreated cases and those in patients treated expressly with a view to avoiding such changes. It seems that, with current orthodox treatment, several of the changes sometimes considered typical of burns—e.g., severe azotæmia, hyperpotassæmia, anuria, and acute tubular necrosis—have become rare. There remain under present treatment disturbances of metabolism of sodium and water which we do not fully understand, but despite these most patients with severe burns can now be carried through the first week or so. Some patients who would previously have died during the shock phase now do so later. Sometimes the cause is known, and often infection plays a part; but there remain cases which we do not understand. These present a challenge to clinical research and surgical technique.

Summary

The intake and urinary output of fluid, sodium, chloride, and potassium in a series of treated burnt patients are described.

The retention of sodium and water is usual in the first few days. The excretion of both can be increased by giving a greatly increased amount, but this may be clinically undesirable.

Anuria was not seen in any of the cases studied, nor did the character of the urine suggest a tubular lesion. A moderate temporary azotæmia developed in the patients with more severe burns.

Moderate negative potassium balances were found in the first few days; these were readily corrected by moderate increases of intake.

Treated burns do not show extreme variations of serum-electrolyte levels, but a moderate fall of serum-sodium level during the period of retention is usual.

The implications of these findings in the altered physiology after burning are discussed.

We wish to acknowledge the help of our surgical colleagues in this study, and that of Dr. Elizabeth Topley and Miss S. Baar in blood-volume and certain chemical estimations.

REFERENCES

Black, D. A. K., Milne, M. D. (1952) *Lancet*, i, 244.
Bland, J. M. (1952) The Clinical Use of Fluid and Electrolytes. Philadelphia and London.
Borst, J. G. G. (1948) *Acta med. scand.* **130**, suppl. 207, 1.
Clark, E. J., Peters, R. A., Rossiter, R. J. (1944) *Quart. J. exp. Physiol.* **33**, 113.
Coller, F. A., Iob, V., Vaughan, H. H., Kalder, N. B., Moyer, C. A. (1945) *Ann. Surg.* **122**, 663.
Cooper, D. R., Iob, V., Coller, F. A. (1949) *Ibid*, **129**, 1.
Cope, O., Moore, F. D. (1947) *Ibid*, **126**, 1010.
Elman, R., Lemmer, R. A., Weichselbaum, T. E. (1949) *Ibid*, **130**, 703.
Epstein, F. H., Goodyer, A. V. N., Lawrason, F. D., Relman, A. S. (1951) *J. clin. Invest.* **30**, 63.
Evans, E. I. (1950) *Ann. Surg.* **131**, 945.
— Butterfield, W. J. H. (1951) *Ibid*, **134**, 588.
— Purnell, O. J., Robinett, P. W., Batchelor, A., Martin, M. (1952) *Ibid*, **135**, 804.
Fourman, P. (1952) *Lancet*, i, 1042.
Fox, C. L. (1944) *J. Amer. med. Ass.* **124**, 207.
— Baer, H. (1947) *Amer. J. Physiol.* **151**, 155.
— Winfield, J. M., Slobody, L. B., Swindler, C. M., Lattimer, J. K. (1952) *J. Amer. med. Ass.* **148**, 827.
Glenn, W. W. L., Muus, J., Drinker, C. K. (1943) *J. clin. Invest.* **22**, 451.
Haynes, B. W., DeBakey, M. E., Denham, F. R. (1951) *Ann. Surg.* **134**, 617.
Keyser, J. W. (1948) *Ibid*, **127**, 605.
Kolthoff, M., Van Berk, L. (1927) *Z. analyt. Chem.* **70**, 369.
Leaf, A., Mamby, A. R. (1952) *J. clin. Invest.* **31**, 60.
Lloyd, C. W. (1952) *Recent Progr. Hormone Res.* **7**, 469.
Lowdon, A. G. R., McKail, R. A., Rae, S. L., Stewart, C. P., Wilson, W. C. (1939) *J. Physiol.* **96**, (Proc.) 27.
Lucido, J. (1940) *Ann. Surg.* **111**, 640.
Lucké, B. (1946) *Mil. Surg.* **99**, 371.
Luetscher, J. A., Hall, A. D., Kremer, V. L. (1950) *J. clin. Invest.* **29**, 896.
McCance, R. A. (1935) *Proc. roy. Soc.* B. **119**, 245.
McLean, R., Moritz, A. R., Roos, A. (1947) *J. clin. Invest.* **26**, 497.
Marks, L. J. (1950) *Ann. Surg.* **132**, 20.
Miller, G. E. (1951) *Circulation*, **4**, 270.

References continued at foot of next column

TYPE-12 STREPTOCOCCI ASSOCIATED WITH ACUTE HÆMORRHAGIC NEPHRITIS

MARY J. WILMERS
M.D. Lond., F.R.C.P.
PHYSICIAN TO CHILDREN'S DEPARTMENT, KING'S COLLEGE HOSPITAL AND THE QUEEN ELIZABETH GROUP OF HOSPITALS, LONDON

A. C. CUNLIFFE
M.D. Camb.
READER IN BACTERIOLOGY IN THE UNIVERSITY OF LONDON; BACTERIOLOGIST, KING'S COLLEGE HOSPITAL

R. E. O. WILLIAMS
B.Sc., M.D. Lond.
DIRECTOR, STREPTOCOCCUS REFERENCE LABORATORY, PUBLIC HEALTH LABORATORY SERVICE, COLINDALE, LONDON

A RELATION between acute glomerulonephritis in children and young adults and preceding streptococcal infections has long been recognised, and Rammelkamp et al. (1952) have recently brought forward evidence suggesting that the sequela of nephritis is largely confined to infections with one type of group-A hæmolytic streptococcus—namely, type 12. Subsequently Dingle et al. (1953) and Rammelkamp and Weaver (1953) have postulated that the epidemiology of acute hæmorrhagic nephritis is basically the epidemiology of certain strains of group-A streptococci which are "nephritogenic" and they have produced further evidence incriminating the type-12 streptococcus.

We have investigated the types of group-A hæmolytic streptococci associated with acute glomerulonephritis in this country, and we find a similar association with type 12.

Material and Methods

The patients investigated formed two groups. The *first group* numbered 11, of whom 10 had typical acute nephritis and yielded group-A streptococci. All these patients were under the care of, or seen by, one of us (M. J. W.) at King's College Hospital, the Belgrave Hospital for Children, the South London Hospital for Women and Children, or the Queen Elizabeth Group of Hospitals, London. Throat and nose swabs were taken as soon after admission as possible, and all strains of group-A hæmolytic streptococci isolated were sent to the Streptococcus Reference Laboratory, Colindale, for typing.

The *second group* numbered 23, of whom 21 were diagnosed as having acute glomerulonephritis, in various hospitals in England and Wales, from which group-A streptococci were sent to the Streptococcus Reference Laboratory through the kindness of various pathologists.

To reduce the possibility that we were dealing with infections acquired in hospital, cases were not included in our series unless the streptococcus was isolated within five days of the patient's admission.

The type of streptococcus was identified by Griffith slide agglutination and Lancefield precipitin methods (see Williams 1954).

DR. BULL, DR. ENGLAND: REFERENCES—*continued*

Moore, F. D., Ball, M. R. (1952) The Metabolic Response to Surgery. Springfield, Ill.
— Evans, R. D., Ball, M. R. (1948) *Ann. Surg.* **128**, 266.
Peters, J. P. (1952) *Amer. J. Med.* **12**, 66.
Schales, O., Schales, S. S. (1941) *J. biol. Chem.* **140**, 879.
Scudder, J. (1940) Shock: Blood Studies as a Guide to Therapy. Philadelphia and London.
Taylor, F. H. L., Levenson, S. M., Davidson, C. S., Adams, M. A. (1943) *New Engl. J. Med.* **229**, 855.
Tenery, R. M. (1941) *Surg. Gynec. Obstet.* **72**, 1018.
Walker, J. (1945) *Amer. J. med. Sci.* **209**, 413.
Wallace, A. B. (1951) *Lancet*, i, 501.
Warren, J. V., Merrill, A. J., Stead, E. A. (1943) *J. clin. Invest.* **22**, 635.
Wilkinson, A. W., Billing, B. H., Nagy, G., Stewart, C. P. (1950) *Lancet*, ii, 135.
Wilson, W. C., Stewart, C. P. (1939) *Edinb. med. J.* **46**, 153.
Winfield, J. M., Fox, C. L., Mersheimer, W. L. (1951) *Ann. Surg.* **134**, 626.

FREQUENCY OF VARIOUS TYPES OF STREPTOCOCCI IN PATIENTS WITH NEPHRITIS AND IN CONTROLS

Type of streptococcus*	Typical acute glomerulonephritis			Doubtful glomerulonephritis	Controls	
	First group	Second group	All cases		Acute rheumatism and anaphylactoid purpura	P.H.L.S. type-distribution survey (%)
12	10	18	28 (90·4%)	..	..	8·2
1	..	1	1 (3·2%)	1	1	10·0
2	..	1	1 (3·2%)	..	..	1·8
3	..	1	1 (3·2%)	..	1	7·5
5	..	..	..	1	..	5·1
6	..	..	..	..	4	5·0
14	..	..	..	..	..	0·5
22	..	..	..	1	..	4·0
5/11/27/44	..	..	..	..	1	9·9
Other types, &c.	..	..	..	..	..	48·0
No. of patients	10	21	31	3	7	1380

* All typing results are from the precipitin test except the last three rows, which include results of agglutinin tests.

Clinical Diagnosis

In the *first group* acute nephritis was diagnosed on the history and on the presence of two or more of the following criteria: (1) hæmaturia and albuminuria, (2) raised blood-pressure, (3) raised blood-urea level, and (4) raised erythrocyte-sedimentation rate.

In 9 cases there was a history of tonsillitis, infection of the upper respiratory tract, or otitis media, ten to twenty-eight days before the onset of nephritis; 1 case followed tonsillectomy, and 1 impetigo. The following 2 cases require special mention:

Case 1.—A boy was admitted with vomiting and severe abdominal pain. Shortly after admission he had frank blood and clots in his urine. There was no further macroscopic hæmaturia, but he had slight microscopic hæmaturia and a trace of albumin, which cleared in six days. As there was no other evidence of nephritis the diagnosis remains in some doubt.

Case 2.—A girl was an inpatient with tuberculous pleural effusion. On Feb. 11, 1953, another child was admitted to the same ward with acute nephritis and hæmolytic streptococci, not sent for typing, in his throat. The girl developed impetigo on March 28 and hæmaturia, albuminuria, and hypertension on April 6; her throat swabs yielded type-12 streptococci. Meanwhile the boy had developed acute tonsillitis on April 1, but unfortunately no throat swab was taken. The girl is included among the patients with nephritis.

Clinical details for the *second group* of cases are fewer, but in 21 of the 23 cases the physician in charge was able to give us a clear diagnosis of acute (Ellis type-1) glomerulonephritis.

Controls

During the period of this investigation and in the same hospitals nose and throat swabs were taken from 19 patients admitted with acute rheumatism or anaphylactoid purpura; 7 yielded group-A streptococci. These form a small but useful control group because they were drawn from the same geographical area at the same time and nursed in the same wards.

As a further control we have the results of three surveys made by the Public Health Laboratory Service in November, 1952, May, 1953, and November, 1953, to determine the frequency of various types of streptococci in England, Wales, and Northern Ireland. In each survey all the group-A streptococci isolated by the laboratories of the Service in one week were submitted for typing.

Results

We obtained streptococci from 31 cases diagnosed as clinically typical acute glomerulonephritis, and 28 (90%) of these were of type 12 (see table). In the first group, in which the diagnosis was in all cases made by one of us (M. J. W.), all the streptococci were of type 12. In the second group 3 of 21 patients yielded streptococci of other types; although we have not had the same detailed clinical records for these patients, they were all diagnosed as acute (Ellis type-1) nephritis, and we have no reason to doubt the diagnosis.

3 cases were classed as doubtful acute glomerulonephritis: 1 because the signs were considered atypical by the physician; 1 was case 1 described above; and the 3rd was possibly a recurrence of previous disease.

No type-12 streptococci were isolated from the 7 cases of anaphylactoid purpura, although one strain was agglutinated by the sera for types 5, 11, 27, and 44 and is certainly related to type 12. Only 8·2% of the 1380 strains from the Public Health Laboratory Service type-distribution surveys were of type 12.

Although type 12 is one of the commonest types of streptococci at present found in England and Wales, it is clear that the prevalence of streptococci of this type in the throats of patients with acute glomerulonephritis is very much greater than can be explained by chance. Our findings suggest that in this country, as in America, there is a close relation between acute glomerulonephritis and infection with type-12 streptococci.

The following pathologists sent us the streptococci that were used in our analysis: Dr. R. Blowers, Middlesbrough; Dr. D. R. Christie, Hereford; Dr. G. T. Cook, Guildford; Dr. S. C. Dyke, Walsall; Dr. Anne Gibson, London; Dr. E. H. Gillespie, Sheffield; Dr. W. A. Gillespie, Bristol; Dr. K. E. Hughes, Portsmouth; Dr. R. Irene Hutchinson, Southampton; Dr. A. C. Jones, Shrewsbury; Dr. B. Levin, South London Hospital; Dr. L. A. Little, Harrogate; Dr. W. K. McGinley, Whiston; Dr. P. H. Martin, Ipswich; Dr. Doris Stone, Epsom; Dr. R. L. Vollum, Oxford. We are very grateful to them and to the clinicians who supplied histories of the patients.

REFERENCES

Dingle, J. H., Rammelkamp, C. H. jun., Wannamaker, L. W. (1953) *Lancet*, **1**, 736.
Rammelkamp, C. H. jun., Weaver, R. S. (1953) *J. clin. Invest*, **32**, 345.
— — Dingle, J. H. (1952) *Trans. Ass. Amer. Phys*, **65**, 168.
Williams, R. E. O. (1954) *J. gen. Microbiol.* **10**, 337.

MUSCLE RESISTANCE TO STRETCH OF THE BICEPS BRACHII IN THE EARLY STAGE OF POLIOMYELITIS

G. P. MITCHELL
M.C., M.B. Aberd., F.R.C.S.E.
LATE SENIOR REGISTRAR, WINGFIELD MORRIS ORTHOPÆDIC HOSPITAL
From the Nuffield Orthopædic Centre, Oxford

FLEXION deformity of the elbow due to permanent shortening of the biceps muscle is an occasional complication in poliomyelitis patients who have had inadequate treatment during the early stage of the disease. It is therefore important to understand the ætiology of this type of muscle contraction.

The deforming factors observed during the early stage of poliomyelitis have been described in a previous paper (Mitchell 1952), where views were expressed as to their ætiology. It was considered that limitation of straight leg raising and shoulder abduction was due to pain arising from residual inflammatory changes in the region of the dorsal roots or meninges. Muscle contraction was initiated by passive movements which exerted traction on the main nerves and was therefore considered to be guarding. This type of contraction was described as muscle resistance to stretch in preference to the term muscle spasm, since no contraction was found when the muscle was at rest.

Fig. 1—Limitation of elbow extension at rest.

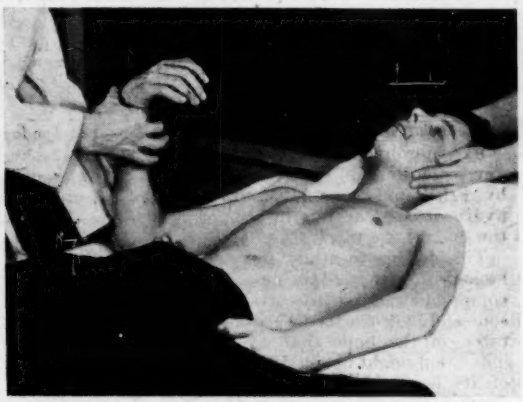


Fig. 2—Limitation of elbow extension increased by contralateral flexion of neck.

Limitation of elbow extension caused by resistance to stretch of the biceps muscle was noted in a few cases. Doubts were expressed as to whether this overaction of the biceps could be classified as a simple guarding action, and further investigation was thought necessary before it could also be attributed to pain arising in the region of the dorsal roots or meninges. I report here the response to nerve-traction tests applied to the upper limb in a further study of this condition.

Nerve-traction Tests

The muscle resistance which limits straight leg raising in the early stage of poliomyelitis is increased by dorsiflexion of the foot, with consequent reduction in the angle of straight leg raising (sciatic-nerve stretch-test of Lasègue). If the biceps-muscle resistance which limits elbow extension is to be regarded as a similar guarding action, it should likewise be increased by any test which exerts traction on the main nerves.

Fig. 1 shows the limitation of passive elbow extension in a patient, aged 19, two weeks after the onset of poliomyelitis—muscle grading: biceps 3, triceps 1. Figs. 2–4 show the decreased range of passive elbow extension which followed nerve-traction tests. Attempted extension of the elbow beyond this degree caused a considerable increase in biceps-muscle contraction and was accompanied by severe pain.

Persistent neck stiffness accompanied the muscle resistance to stretch of the biceps in this patient until the sixth week, when full muscular relaxation was obtained and nerve-traction tests gave a negative response.

Conclusion

Nerve-traction tests applied to the upper limb increase the resistance to stretch of the biceps muscle and decrease the range of passive elbow extension. The muscle contraction is considered therefore to be a guarding action and similar in type to the muscle contraction which limits straight leg raising in the early stage.

Persistent neck stiffness has also been a feature in other patients showing a similar degree of biceps-muscle contraction.

Lumbar puncture in the fifth week showed that the cerebrospinal fluid contained protein 120 mg. per 100 ml. compared with 70 mg. in the first week. Watkins (1948) investigated the cerebrospinal fluid of patients with persistent stiffness and found an average increase of protein from 60 mg. per 100 ml. in the first week to 160 mg. in the sixth week.

It is concluded that resistance to stretch of the biceps muscle is a guarding action to prevent painful stretching of the main nerves. The persistent neck stiffness, associated with a rise of protein in the cerebrospinal fluid, suggests that residual inflammatory changes, probably in the region of the dorsal roots or meninges, are the source of pain.

REFERENCES

Mitchell, G. P. (1952) *Lancet*, ii, 451.
Watkins, A. L. (1948) *Proc. int. Conf. Poliomyelitis*, p. 142.

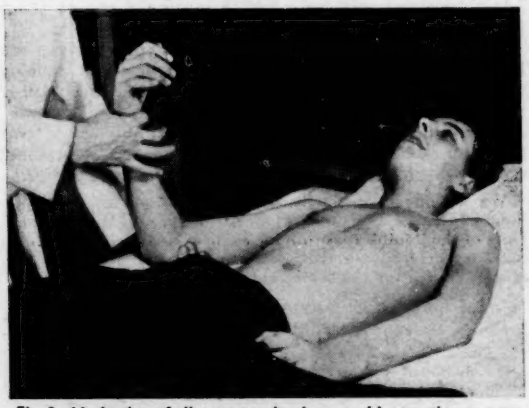


Fig. 3—Limitation of elbow extension increased by traction on arm.

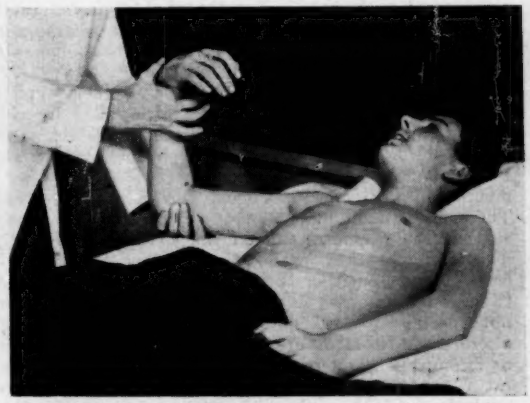
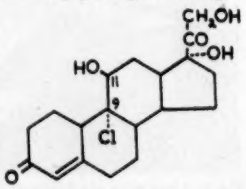


Fig. 4—Limitation of elbow extension increased by abduction of arm.

A CHLORO-DERIVATIVE OF CORTISONE WITH ENHANCED ACTIVITY

R. K. CALLOW, M.A., D.Phil. Oxfd
JENNIFER LLOYD, B.Sc. Lond.
D. A. LONG, M.D. Lond.
From the National Institute for Medical Research, London

9α-Chlorohydrocortisone acetate (9α-chloro-17α-hydroxycorticosterone) (see figure) was recently reported by Fried and Sabo (1953) to be more effective than hydrocortisone acetate in promoting glycogen storage in the liver of the rat.



This led us to study the biological activity of the new compound relative to cortisone and hydrocortisone acetates, in the hope that an indication might be obtained of its therapeutic activity. From work in this laboratory it appears that animal species may be divided into two groups by their reactions to the toxic effects of cortisone acetate administered in pharmacological doses. The mouse, rat, rabbit, and ferret are sensitive to cortisone, in that their body-weight falls rapidly with cortisone administration, while the guineapig, monkey and man are resistant, and maintain their weight (Lloyd and Long 1954). The various analogies drawn between man and the guineapig (Long 1954) indicate that evidence obtained from cortisone-resistant animals is likely to prove a more reliable guide to therapeutic efficiency than that from cortisone-sensitive species. But when evidence from both sensitive and resistant species is in agreement the argument is strengthened, for it becomes likely that a general phenomenon is being studied, and that that which occurs as a phenomenon in animals in general is likely to occur in the particular species, man.

In all the tests described, 9α-chlorohydrocortisone shows enhanced activity relative to cortisone. It is probable that high therapeutic activity in man may be expected.

The cause of this enhancement of activity can only be surmised. It may perhaps be that substitution by chlorine at C-9 stabilises the 11-hydroxyl group, or that the halogen atom facilitates some condensation reaction —e.g., with sulphydryl compounds. Fried and Sabo (1954) have recently reported that the fluoro-substituted derivative, 9α-fluorohydrocortisone, is even more active in the glycogen-deposition test. They point out that by substitution with halogen atoms of decreasing volume increasing activity is obtained.

Methods

Mouse Toxicity Test.—The routine crude toxicity test is carried out in adult ♀ Schneider mice (20–25 g.). 50 mg./kg. of the standard (cortisone acetate) and of the steroid with unknown activity are injected intramuscularly daily for ten days into respective groups of animals. Mortality, fall in body-weight, and change in organ size are compared.

Rat Thymus Test.—A toxicity test of this type is made more sensitive if littermate nestling rats are used to reduce animal variation: the method resembles that described for corticotrophin assay (Bruce, Parkes, and Perry 1952). Using 8 litters in a (3 + 3) assay, each member of a litter receives one of the six doses involved. The assay is made more accurate if the doses are chosen so that the responses fall on the steepest part of the dose response line. The pharmacological effects of cortisone in sensitive species—loss of carcase weight, thymus atrophy, and liver and kidney hypertrophy—are not specific to cortisone or hydrocortisone, although alteration of the structure of the molecule either abolishes or diminishes the activity of the steroid in the nestling rat (Lloyd unpublished). The method of statistical analysis was that employed by Bruce et al. (1952).

Tuberculin-sensitivity.—In the cortisone-resistant guineapig, the ability of the unknown steroid to depress sensitivity to tuberculin is compared with that of cortisone acetate using the method of Long and Miles (1950). Desensitising activity depends upon the structure of the cortisone molecule remaining intact (Long and Spensley 1954).

Results

Toxicity in Adult Mice.—9α-Chlorohydrocortisone acetate (50 mg./kg./day) killed seven out of ten female mice of approximately 20 g. in weight, while cortisone acetate at the same dosage killed three mice out of ten. *t*-tests showed that 9α-chlorohydrocortisone caused a significantly greater fall in body-weight ($P = 0.05$) and increase of kidney size ($P = 0.01$). There was a slight but not significant degree of liver hypertrophy. Atrophy of thymus, spleen, and adrenal cortex was maximal in both cases, as might be expected with such heavy doses. These effects do not, however, indicate an enhancement of activity due to substitution by chlorine, for no significant difference could be detected when the activity of 9α-chlorohydrocortisone acetate and hydrocortisone acetate were compared by the same method. However, maximal effects were being induced and, even if a difference in activity existed, it is doubtful whether it could be shown by this method.

Toxicity in Nestling Rats.—9α-Chlorohydrocortisone acetate (2·5 and 1·25 mg./kg.) and cortisone acetate (2·5 and 1·25 mg./kg.) inhibited growth to a comparable degree. But 9α-chlorohydrocortisone acetate proved 3·40 times as active as cortisone acetate in causing thymus atrophy and 4·76 times as active in producing liver hypertrophy. In each case the variance ratio was significant ($P = 0.001$).

A comparison of the activities of 9α-chlorohydrocortisone acetate and hydrocortisone acetate showed that chlorine substitution increased thymus involuting activity 1·42 times. This was associated with increased liver hypertrophy, although the latter effect could not be subjected to analysis because of a difference in slope of the respective response curves.

Tuberculin Test in Guineapigs.—A preliminary experiment showed that 2 mg./kg. of 9α-chlorohydrocortisone acetate had approximately the same desensitising-power as 10 mg./kg. of cortisone acetate. A second experiment showed that 0·4 mg./kg. of 9α-chlorohydrocortisone acetate is 1·34 times as effective as 2 mg./kg. of cortisone acetate, while 2 mg./kg. of 9α-chlorohydrocortisone acetate is 1·12 times as effective as 10 mg./kg. of cortisone acetate. 9α-Chlorohydrocortisone is therefore approximately five times as effective as cortisone acetate in this respect.

Summary

1. 9α-Chlorohydrocortisone acetate inhibits growth of adult mice and induces a higher mortality among them than cortisone acetate.

2. 9α-Chlorohydrocortisone acetate is more active than hydrocortisone acetate or cortisone acetate in causing thymus involution and liver hypertrophy in the nestling rat.

3. 9α-Chlorohydrocortisone acetate is more active than hydrocortisone acetate and cortisone acetate in depressing sensitivity to tuberculin in B.C.G.-infected guineapigs.

We are indebted to Dr. Knud Tolderlund of the State Serum Institute, Copenhagen, for the B.C.G.; to Mr. Roland J. Dahl of the Squibb Institute for Medical Research, New York, for the 9α-chlorohydrocortisone acetate; and to Miss M. V. Mussett, B.SC. for the statistical analyses.

REFERENCES

Bruce, H. M., Parkes, A. S., Perry, W. L. M. (1952) *Lancet*, i, 790.
Fried, J., Sabo, F. F. (1953) *J. Amer. chem. Soc.* **75**, 2273.
— — (1954) *Ibid*, **76**, 1455.
Lloyd, J., Long, D. A. (1954) *J. Endocrin.* **10**, vi.
Long, D. A. (1954) *Lancet*, i, 529.
— Miles, A. A. (1950) *Ibid*, i, 492.
— Spensley, P. (1954) *Ibid*, i, 645.

POSITIVE-PRESSURE RESPIRATION

MANAGEMENT OF PATIENTS TREATED WITH CLEVEDON RESPIRATOR

JAMES MACRAE
M.D. Glasg., F.R.F.P.S., D.P.H.
RESIDENT PHYSICIAN

G. D. W. MCKENDRICK
M.A., B.M. Oxfd, M.R.C.P.
DEPUTY PHYSICIAN

E. M. SEFTON
M.R.C.S., D.C.H.
ASSISTANT MEDICAL OFFICER

R. V. WALLEY
B.A., M.B. Camb.
ASSISTANT MEDICAL OFFICER

HAM GREEN HOSPITAL, BRISTOL

THE use of the Clevedon respirator was described and the management of positive-pressure respiration briefly discussed by Macrae et al. (1953). This hospital has now handled three cases of bulbar paralysis in poliomyelitis treated by this method. All three patients were adult males. One lived for three days, another for fourteen days, and one remains alive seven months later, having had positive-pressure respiration for six weeks.

Much valuable clinical and biochemical information gained from the extensive experience of manual positive pressure in Denmark has been published (Astrup et al. 1954, Anderson and Ibsen 1954). We describe here simple practical points of management of patients treated with the Clevedon respirator and some of the difficulties that arise.

Choice of Case

The use of positive-pressure respiration was restricted to cases of combined respiratory and pharyngeal paralysis. Although inability to swallow may precede inability to breathe, our three patients developed respiratory paralysis first and were all being treated in tank respirators. The decision to do tracheotomy and to give positive-pressure respiration was made when pharyngeal pooling, cyanosis, facial congestion, and mental disturbance had appeared and the patients were going downhill rapidly. In all three patients pharyngeal secretions had been aspirated, and in one of the fatal cases pneumonia had developed before tracheotomy was done. From previous experience of such cases we are convinced that these patients would have died within a few hours without positive-pressure respiration, because it is impossible to keep the pharynx dry by suction. There is no doubt that our decision to give positive-pressure respiration was delayed too long. In a sense this was done advisedly, in that we did not want to try a new and (in our hands) untried technique on any patient for whom there was a chance of survival with treatment by familiar methods.

Operation

The patient was transferred to a bed while respiration was maintained by positive pressure through a face-mask with an Oxford inflator (Macintosh 1953), and the tracheotomy was done under local anæsthesia.

The following points require emphasis :

(1) An endotracheal tube could not be passed through the mouth in the type of tank respirator in use because extension of the head was limited.

(2) A high tracheotomy is essential. In one patient the trachea was torn in the first few days, and it became increasingly difficult to keep the cuff in the trachea and the end of the tube clear of the bronchi.

(3) Two people were required to work the Oxford inflator.

(4) Positive-pressure respiration through a face-mask is not ideal and must have added to the amount of pharyngeal secretions inhaled. General anæsthesia with the passage of an endotracheal tube may lessen this risk when it is practicable (Anderson and Ibsen 1954).

Management

The Clevedon respirator was attached to the patient as soon as we were satisfied that the airway was clear, respiration being maintained meanwhile with the Oxford inflator through the tracheal tube.

Tracheal Toilet

During the first twenty-four hours frequent aspirations of secretion were necessary, for some periods at fifteen-minute intervals. A soft rubber catheter was mainly used and was found easy to pass into either main bronchus by turning the patient's head to the opposite side. Aspiration was interrupted every ten to fifteen seconds to give the patient two or three breaths. The need for suction became less frequent as the days passed, and intervals of four, or at most six, hours passed without its use. The indications for suction were as follows :

(1) Audible râles in the tube or heard over the chest through a stethoscope.
(2) Cyanosis.
(3) Restlessness.
(4) Increase in pressure on the machine circuit, shown by the pressure gauge, by expansion of the delivery bag, or by alteration in rhythm.

Cuffed Tube

This was left in place for the first three days and thereafter changed daily. Magill tubes were cut down to a convenient length (15–17 cm.) and cut off at the distal end as near the cuff as possible. The smaller cuffs of the Danish pattern gave a much safer margin between the tracheal wound and the bifurcation, but some of these cuffs leaked. A leaking cuff was the commonest cause of dramatic failure of positive-pressure respiration—a failure which might be partial or complete. To prevent the tube from entering the right main bronchus, the cuff was inserted so that its top was no more than 1 cm. below the lower margin of the tracheal window. Pressure from the cuff caused tracheal ulceration, which was found at necropsy. In the patient who died after three days' positive-pressure respiration the loss of mucosa was slight—0·5 cm. of one tracheal ring only—but in the patient who survived for fourteen days there was complete loss of mucosa over the two rings below the tracheotomy, both rings having split. There were further small areas of denudation over the next two rings below.

Humidification

A British Oxygen humidifier was used, reinforced by rebreathing over 75 cm. of tubing 0·9 mm. in diameter. Although this must have given a humidity very much less than that recommended by Marshall and Spalding (1953), the mucus never became viscous and was always easy to aspirate.

Collapse of lung, as shown by radiography, occurred only twice, on both occasions involving the right upper lobe and rapidly relieved by aspiration combined with chest percussion and squeezing.

Control of Respiration

It is difficult to determine the volume required to ventilate any given patient satisfactorily. Considerable variation was reported by Astrup et al. (1954) without mention of harmful effect, and this was our experience. When the patient was conscious, we took notice of his opinion, but on many occasions it was clearly unreliable. We thought it better to err on the side of overventilation to ensure adequate oxygenation, bearing in mind that a febrile patient requires more oxygen. An excess of carbon dioxide could also be avoided in this manner, and certainly we saw no sign of it as shown clinically by a rise in blood-pressure, vasodilation, or mental change. Blood pH and carbon dioxide were not estimated. A deficit of carbon dioxide causing vasoconstriction, tissue anoxæmia, mental change, and possibly a rise in blood-pressure is more difficult to recognise clinically. Again we saw no

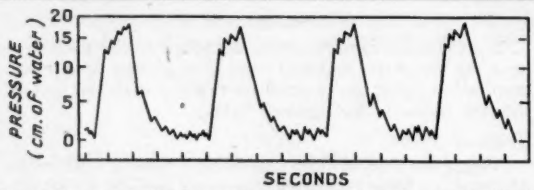


Fig. 1—Pressure tracing from patient being ventilated at about 8 litres a minute.

signs of it, and, with our moderate ventilation, it would be unlikely for a gross deficit to occur.

With these factors in mind we set the flow-meters to give a volume of 7–9 litres a minute. When the patient was febrile, during the initial phase, 3 or 4 litres of this was oxygen, and the rest compressed air. Later the oxygen was reduced to 2 litres a minute and finally omitted. The flow-meters (of simple dry-bobbin type) were found by spirometry to under-read by about 15% at a flow of 8 litres a minute. A further loss of about 1 litre a minute occurred in the machine, probably across the valve. The rate was adjusted by setting the inspiration and expiration timing with a stop-watch. With a volume of 7–9 litres a minute a rate of 16 respirations a minute gave a tidal air of about 0·5 litre.

Inspiration and expiration were adjusted to last 1·5–2 seconds and 2–3 seconds respectively. The longer expiration allows the passive emptying of the lungs to be completed and is also desirable to ensure a normal cardiac output. Cournand et al. (1948) have shown, working with healthy people, that positive pressure in the thorax during inspiration reduces the filling pressure of the right heart and hence the cardiac output. During expiration there is a compensatory increase. To prevent a decrease in total cardiac output, the fall in pressure in expiration must be rapid and the duration of low or zero pressure long. The pressure tracing (fig. 1) appears satisfactory in these respects, being similar to tracings of those cases in which Cournand et al. (1948) showed a slight increase in cardiac output. The pressures were normally measured with an aneroid gauge, but for these tracings a water manometer was used. At no time did the patient have a fall in blood-pressure or complain of faintness, which might have been expected if the cardiac output had much decreased.

For a short time a tidal air of 14 litres a minute was obtained with this machine. The pressure necessary was 22 cm. of water, not excessive compared with 18 cm. with the usual ventilation of 8 litres a minute. During the first twenty-four hours of ventilation with one patient it was necessary to use a pressure of 40 cm. of water to obtain sufficient ventilation both with the manual and the mechanical inflators. There was evidence of considerable bronchial spasm during this period. During this time expiration was set at 4–5 seconds and inspiration at 1–1·5 seconds.

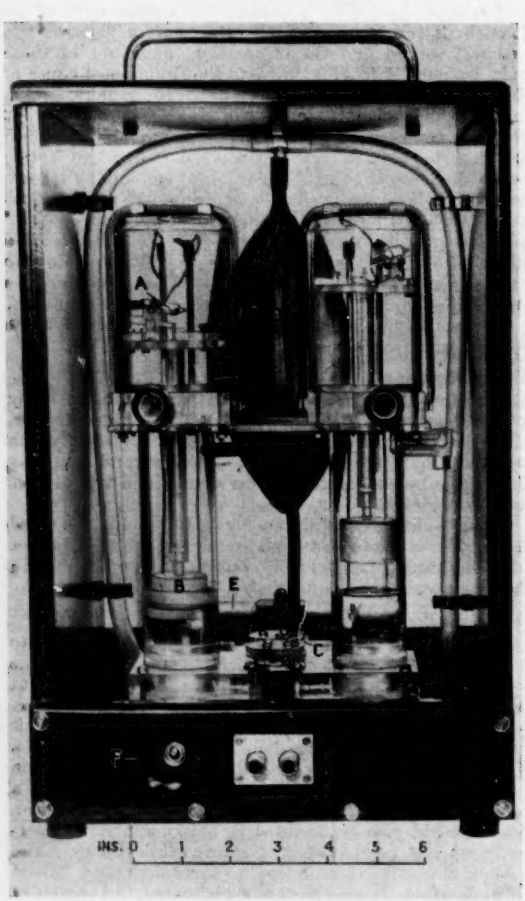


Fig. 2—Clevedon respirator: A, tilting mercury switch; B, inverted plastic bell; C, inspiration and expiration control valves; D, reservoir breathing-bag; E, electromagnetic breathing-valve; F, switch.

General Management

The patients were nursed with a head-down tilt of 10°–15°, and their position was changed hourly. Daily chest radiographs were taken. Nasal œsophageal feeds were started soon after tracheotomy and continued until normal swallowing returned. The joints were moved passively from the onset, and later active physiotherapy was given.

Clevedon Respirator

Since November, 1953, the Clevedon respirator has been further developed and has become a more efficient and smaller machine (fig. 2). It is now constructed almost entirely of plastic material, and the electrolytic switches have been changed for mercury tilting switches motivated by inverted bells moved by distilled water in the U-tube. This has eliminated both relays and electrolyte. Taps fitted with clack valves have been introduced giving absolute independent control of inspiration and expiration. These advances have made it possible to achieve any desired pattern of respiration, while the essential principles of the machine remain as previously described.

Conclusions

Certain principles emerge from our limited experience. The closest possible medical supervision is essential, and for the first twenty-four hours at least a doctor should be present in the ward. The commonest cause of sudden deterioration is some abnormality in the cuffed tube, but rapid alteration in the patient's condition may be due to other causes—e.g., accumulated secretions, lung collapse, and failure of the air-supply. Our routine, when any unaccountable symptom presented, was as follows:

(1) Check the cuffed tube.
(2) Check the pressure.
(3) Listen to the chest to determine if the air entry is equal throughout.
(4) Aspirate.
(5) If necessary, change to manual positive pressure with Oxford inflator while the gas cylinders, circuit connections, and machine are checked over.

REFERENCES

Anderson, E. W., Ibsen, B. (1954) *Brit. med. J.* i, 786.
Astrup, P., Götzche, H., Neukirch, F. (1954) *Ibid*, p. 780.
Cournand, A., Motley, H. L., Werkö, L., Richards, D. W. jun. (1948) *Amer. J. Physiol.* **152**, 162.
Macintosh, R. R. (1953) *Brit. med. J.* ii, 202.
Macrae, J., McKendrick, G. D. W., Claremont, J. M., Sefton, E. M., Walley, R. V. (1953) *Lancet*, ii, 971.
Marshall, J., Spalding, J. M. K. (1953) *Ibid*, p. 1022.

SPONTANEOUS TORSION OF SPLEEN INVOLVING TAIL OF PANCREAS

L. MICHAELS
M.B. Lond.
REGISTRAR IN PATHOLOGY, CRUMPSALL HOSPITAL, MANCHESTER

TORSION of the spleen is rare, but occasionally occurs when the pedicle has become elongated (Sutton 1925). An enlarged malarial spleen may also undergo volvulus (Romiti 1940). The clinical features are usually those of an acute abdominal disturbance, and the exact site of the pain naturally varies with the position of the spleen.

The case described here was remarkable in that the patient presented no clinical evidence of an abdominal disorder, the splenic ligament was not elongated, and there was no evidence of previous splenic disease.

A woman, aged 43, had had parkinsonism for six years, during which time stiffness of her limbs and tremor had become progressively worse. Eventually her speech and swallowing became difficult, and she could hardly move without assistance, despite full doses of 'Artane.' She then developed a pressure sore on the sacrum, and for this reason was admitted to hospital. There was no history of an illness suggesting acute encephalitis lethargica, but despite this it was considered that her parkinsonism was postencephalitic.

For her first few days in hospital she seemed to be better and was able to be up most of the day in a chair and to walk short distances. Her pressure sore failed to heal and eventually began to spread, and on Aug. 3, 1953, she began to run a swinging temperature. She was given chloramphenicol 500 mg. t.d.s., but this made no difference to her temperature or to her general condition, which continued to deteriorate. At no time did she complain of abdominal pain, but on Aug. 24 she vomited twice. She died on Aug. 25.

The peritoneal cavity contained about a litre of blood-stained fluid. The spleen was in its normal position but weighed 408 g. and was enlarged to about twice the average size. It was violet, with a smooth surface. The capsule was not thickened. The pedicle, which contained the tip of the tail of the pancreas, was found twisted, with two complete turns in it, and was very œdematous (fig. 1). The spleen was hard, and in the cut surface the pulp was swollen with blood and the malpighian corpuscles were difficult to see. Dissection showed that the splenic vein and its tributaries were distended with blood-clot up to the site of torsion. The splenic artery was collapsed and bloodless beyond the torsion. The tail of the pancreas was deeply constricted 5·5 cm. from the tip at the site of the torsion, beyond which it was swollen and congested (fig. 2).

Microscopy of the spleen and tip of the tail of the pancreas showed severe congestion of both. Some small veins in the tail of the pancreas contained thrombus, judged to have been present for several days by the presence of hyaline change and infiltration with macrophages from the vein wall. There was no ante-mortem thrombus in the splenic vein or in its main tributaries.

It is difficult to explain how the splenic pedicle could have been rotated in this case. The spleen is constantly moving up and down with respiration, and conceivably pressure upon it from a distended stomach or colon could convert this motion into one of rotation upon the axis of its pedicle. Yet, although distended stomach or colon is very common, careful search of the literature has not revealed any other case that did not also have an elongated pedicle or gross pathological enlargement, usually due to malaria.

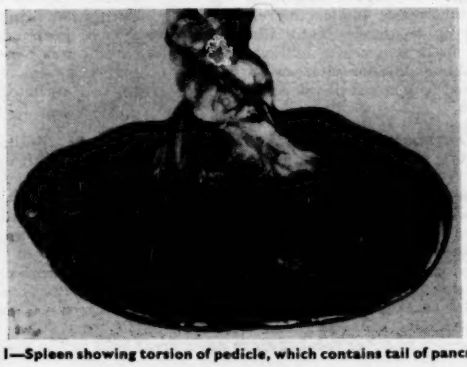


Fig. 1—Spleen showing torsion of pedicle, which contains tail of pancreas.

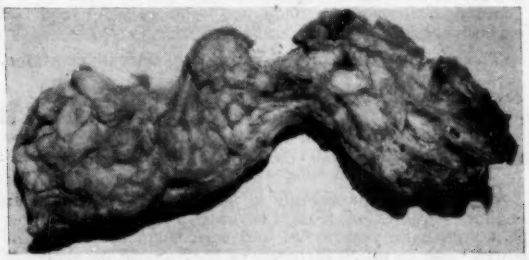


Fig. 2—Terminal part of pancreas dissected from the pedicle. Note constriction at site of torsion, beyond which pancreas is swollen.

The remarkable absence of abdominal symptoms or signs in the present case might be thought to bear some relation to the patient's parkinsonism. She had neither sensory loss, however, nor any visceral abnormality. Sensory loss of any kind is not described as a symptom in the detailed studies of postencephalitic parkinsonism that I have consulted (Parsons 1928, Holt 1937).

I wish to thank Dr. R. V. Dent for the clinical report, and Dr. J. Davson for his advice and permission to publish.

REFERENCES

Holt, W. L. jun. (1937) *Arch. Neurol. Psychiat., Chicago*, **38**, 1135.
Parsons, A. C. (1928) *Rep. publ. Hlth med. Subj., Lond.* no. 49.
Romiti, C. (1940) *Arch. Surg.* **41**, 781.
Sutton, J. E. jun. (1925) *Ann. Surg.* **82**, 239.

Reviews of Books

Isotopic Tracers

Theoretical and Practical Manual for Biological Students and Research Workers. G. E. FRANCIS, reader in biochemistry, St. Bartholomew's Hospital Medical College, London; W. MULLIGAN, senior lecturer in biochemistry, Glasgow University Veterinary School; A. WORMALL, professor of biochemistry, St. Bartholomew's Hospital Medical College. London: University of London Press. 1954. Pp. 306. 37*s.* 6*d.*

IN this practical manual Professor Wormall and his colleagues have set out the theoretical background and the practical exercises of the course on the application of radioactive tracers in biochemistry and medicine run by the biochemical department at St. Bartholomew's Hospital Medical College.

"We shall be gratified," the authors write, "if many of the copies acquire the well-used and stained appearance which is usually one of the hallmarks of a useful laboratory handbook and which results from contact with chemical fumes and bench polish; we hope, however, that contamination with radioactive isotopes will largely or entirely be avoided once the reader has become familiar with the chapters dealing with 'safety precautions.'" The detailed chapters on precautions and a specimen set of rules make it clear that work with radioactive isotopes is not to be lightly undertaken; but the isotopic tracer is so useful a research tool that more and more departments will wish to use it. In this book they will find the minimum they need in apparatus and premises without having to battle with a heavily mathematical introduction. But some introduction there must be, and the first two-thirds of the book give a clear account of what must be known to use isotopic tracers and interpret correctly the results. If the introduction is sufficiently complex to discourage the amateur, no great harm will have been done. The stable isotopes are included as well as the radioactive ones, and a description of the mass spectrometer and a practical exercise in its use are

given. Few of these instruments are yet available in this country, but they are likely to become simpler and less expensive.

The book is well produced with many clear illustrations.

Methods in Medical Research

Vol. 6. Editor: J. MURRAY STEELE, M.D., professor of medicine, New York University College of Medicine, New York. Chicago: Year Book Publishers. London: Interscience Publishers. 1954. Pp. 271. 53*s*.

THE most recent volume in this series begins with an engaging quotation from Cervantes: "There are men that will make you books, and turn them loose into the world, with as much dispatch as they would do a dish of fritters." Prof. Murray Steele claims that this book is "the antithesis of such a one"; but in fact many of the sections are amazingly up to date, in view of the difficulties and delays imposed by multiple authorship. The book has four main subjects—human genetics, environmental medical research, statistics in medical research, and the design and construction of metabolism cages. It is perhaps fitting that such an *olla podrida* should be introduced by a saying of Cervantes.

The handling of the first two topics is eclectic. In the section on genetics the description of the techniques assumes either previous experience in the field or reference to a more comprehensive text. The section on environmental research includes chapters on methods of measuring climatic variables, respiratory exchange, energy metabolism, skin-temperature, and the amount and composition of sweat. The subeditor of the statistical section, Donald Mainland, has accepted the format, conventional in this series, of a number of short chapters, but by writing them all himself has achieved unity. His account of the principles of a controlled therapeutic trial is a valuable and readable summary of this important method, pioneered by the M.R.C. streptomycin trial in 1948. The fourth section is also excellent; here again the subeditor, Arnold Lazarow, has written most of it.

Water, Electrolyte and Acid-Base Balance

HARRY F. WEISBERG, M.D., assistant professor of clinical pathology and clinical medicine, Chicago Medical School. Baltimore: Williams & Wilkins. London: Baillière, Tindall, & Cox. 1953. Pp. 250. 38*s*. 6*d*.

THERE is now universal awareness of the need to recognise and correct disordered water and electrolyte metabolism; but, in this country, relatively few practitioners have mastered the simple principles on which rational therapy must be based. Adequate descriptions of this subject being rare in general medical textbooks, a short account, dealing both with the physiological background of body-fluid disorders and with the practical details of management, is welcome. The author of this new monograph provides a crisp summary of contemporary views and guides his reader's further studies by adding a bibliography of key papers. The jargon of electrolyte metabolism is simply explained, normal data are extensively tabulated, and there is a clear description of the factors responsible for fluid or acid-base imbalance. Normal and abnormal electrolyte physiology are well described, but therapy is accorded much less space, and within its narrow confines the description is disappointingly diffuse. In a future edition, a more forthright account of treatment would make this an excellent book of reference.

Autotrophic Micro-organisms

Fourth Symposium of the Society for General Microbiology. Editors: B. A. FRY and J. L. PEEL. Cambridge: University Press. 1954. Pp. 305. 25*s*.

AUTOTROPHIC bacteria are those which depend on inorganic sources for their supplies of carbon and nitrogen, and either on sunlight or on simple oxidation reactions for the energy needed for the conversion of these elements. (They include the photosynthesising green algæ and the nitrifying bacteria in the root nodules of leguminous plants.) Thus they differ considerably from the bacteria parasitic on animals and plants, which obtain their organic constituents ready synthesised from their hosts; but the distinction is not absolute, and bacteria exist which may adopt either way of life. The contents of this book are of no direct interest to the medical bacteriologist, but anyone with imagination may read with advantage the introductory chapter and the one on the economic importance of these bacteria. So far from their being parasitic on man, it is nearer the truth to say that man is parasitic on them.

Group Psychotherapy

Studies in Methodology of Research and Therapy. FLORENCE B. POWDERMAKER, M.D., PH.D., responsible investigator; JEROME FRANK, M.D., PH.D., principal assistant. Cambridge, Mass.: Harvard University Press for Commonwealth Fund. London: Oxford University Press. 1953. Pp. 615. 42*s*.

THE authors make it clear at the outset that the Veterans Administration authorities sponsored the research reported here because they hoped it would help them in their enormous task of caring, with relatively few psychiatrists, for large numbers of mentally disordered patients. Whether it will contribute in the long run to this purpose is as yet unclear. 124 outpatients, divided into twelve groups, and 118 schizophrenic inpatients in a mental hospital, divided into fifteen groups, were given either group treatment exclusively or group treatment together with individual treatment. Ten experienced psychiatrists and fourteen psychiatrists in training conducted the group treatment; five psychologists, various junior psychiatrists, and two social workers acted as observers. The book contains a wealth of detail regarding the procedures, observations, and speculations which emerged during the course of the study. The problems in the outpatient group (chiefly neurotic patients) were different in many respects from those of the schizophrenics, but in both groups the results suggested—rather than clearly indicated—benefit. This implies no final statement in answer to the question originally posed by the Veterans Administration, since the difficulties of conducting the experiment and of evaluating its results were great; much ingenuity was shown in coping with them. The report is candid, clear, and informative: it has value as a methodological study and an unusually factual account of what goes on in group psychotherapy.

Ophthalmologic Diagnosis

F. HERBERT HAESSLER, M.D., professor and director of the division of ophthalmology, Marquette University School of Medicine, Milwaukee. Baltimore: Williams & Wilkins. London: Baillière, Tindall, & Cox. 1953. Pp. 387. 61*s*. 6*d*.

IN this book Professor Haessler surveys the conditions met in ophthalmic practice and seeks to relate them to their causative systemic disorders. After considering in general the ways in which deranged ocular and orbital structure and function may give rise to these conditions, he goes on to deal more specifically with individual lesions. Occasionally he is too dogmatic, but he offers the junior student of ophthalmology much useful information.

Manual of Clinical Mycology (2nd ed. Philadelphia and London: W. B. Saunders. 1954. Pp. 456. 32*s*. 6*d*.). —The second edition of this manual by Prof. Norman Conant and his colleagues maintains the high standard of the first in conciseness and accuracy, while new information brings it well up to date. Many illustrations also have been added and there is a useful bibliography. The emphasis is clinical, but there is enough laboratory detail to give the book wide appeal to general physicians, dermatologists, and pathologists alike.

Textbook of Virology (2nd ed. London: Baillière, Tindall, & Cox. 1953. Pp. 561. 61*s*. 6*d*.).—Prof. A. J. Rhodes and Prof. C. E. van Rooyen offer us a textbook of virus diseases of man rather than a textbook of virology, and it is suitable for medical and science students rather than specialists. It covers a great deal of ground, and as there are ample references, particularly to review articles, most of the chapters are good starting-points for anyone who wants more detailed knowledge on the virus and rickettsial infections of man. The presentation is clear and didactic, there are many illustrations and diagrams to amplify the text, and the numerous chapter sub-headings are a great help to the reader.

NEW—Phenobarbitone therapy without 'hangover' effects

"Ascorbic acid, 200 mg. at night or on waking has been found valuable in combating the hang-over effects of barbiturates." (PROC. ROY. SOC. MED., 1954 (MAR.), 47, 215).

'SCORBITAL' TRADE MARK

Tablets contain Phenobarbitone gr.¼ (16 mg.) Ascorbic acid 100 mg.

Scorbital is particularly useful for patients who need to take phenobarbitone at night, especially if for a prolonged period.

The risk of an accumulation of hang-over effects is eliminated if Scorbital is prescribed instead of phenobarbitone.

Basic N.H.S. Prices:
Bottle of 50 - 3/6
" " 250 - 13/-

Literature and specimen packings are available on request.

THE BRITISH DRUG HOUSES LTD. (Medical Department) LONDON N.1

SBI/8/541

When the worst is over

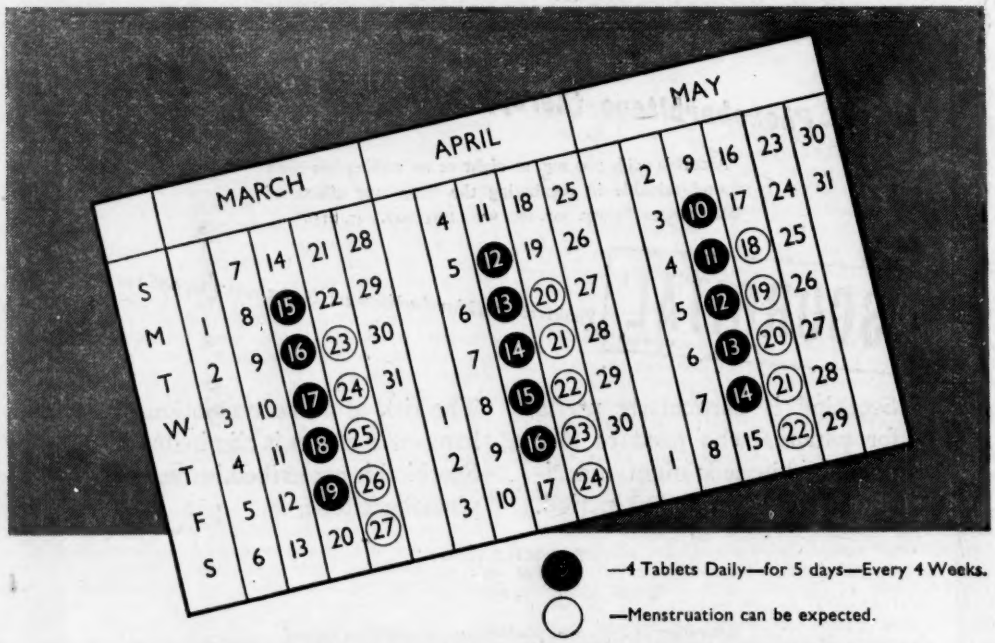
Skill and care have won the battle, and the exhausted body is recuperating. It is *then* that Burgoyne's Tintara may mean the difference between long, dragging convalescence and a rapid recovery. For Tintara is not only beneficial but a really palatable burgundy. It contains no added alcohol or sugar and is a natural product of sun and ironstone soil.

Burgoyne's

TINTARA

(FERRUGINOUS) PRODUCE OF AUSTRALIA

P. B. BURGOYNE & CO. LTD., DOWGATE HILL, LONDON, E.C.4. TEL: CITY 1616



MENSTROGEN

Oral treatment of secondary amenorrhoea

(If no period ensues pregnancy is a likely diagnosis)

PACKINGS : 20, 60, 250 and 500 tablets each containing :—
0.01 mg. Ethinyloestradiol B.P.
10 mg. Ethisterone B.P. per tablet.

Literature on request.

ORGANON LABORATORIES LTD

BRETTENHAM HOUSE, LONDON, W.C.2

Telephone: TEMple Bar 6785/6/7, 0251/2. *Telegrams: Menformon, Rand, London.*

THE LANCET
LONDON: SATURDAY, JULY 3, 1954

Billroth-I Gastrectomy

BILLROTH, the father of gastric surgery (and the only surgeon to have had his head on the coinage of his country), devised two techniques for restoring gastro-intestinal continuity after removal of the diseased lower part of the stomach. The first, described in 1881, restored continuity by uniting the remaining part of the stomach to the duodenum; this technique was abandoned, apparently because leakage at the anastomosis was common. The second, described in 1885, restored continuity by anastomosis of a loop of jejunum to the stomach remnant, after both this and the duodenum had been closed along their respective lines of section. Since then this operation, modified in countless ways, has, until lately, been used almost exclusively in the radical treatment of peptic ulcer and carcinoma ventriculi. Yet it is even less physiological than most operations. It turns the duodenum into an intestinal diverticulum, along which bile and pancreatic juice must make their way to achieve an ill-timed meeting with the rearguard of the food leaving the stomach. The jejunum has to receive raw gastric juice, and food from the gastric remnant is thrust into it without any check by an intervening sphincter. All things considered, the results of this operation are astonishingly good; but it is hardly surprising that it sometimes produces its own disabilities, and occasionally these are worse than the original peptic ulcer pain. Billroth II in fact (to adapt a thought of SAMUEL JOHNSON's) does not always work well, but it is surprising that it works at all.

Now the Billroth-I operation seems to be returning to favour. A few surgeons have practised it for many years, and its original defect of leakage has largely been overcome. For a gastric ulcer it seems a much more sensible measure than the Billroth II, because by it the normal duodenum is anastomosed to the stomach. Usually gastric ulcers do not demand so radical a gastric resection as do duodenal ulcers; and an oblique section of the stomach, which removes most of the lesser curvature while preserving the greater, allows a tube of stomach to be formed which will meet the normal duodenum with ease. Even when it seems at first that there will be difficulty in getting the ends to meet, mobilising the duodenum and pancreas, by incision of the peritoneum lateral to them, and freeing the greater curvature of the stomach, will allow comfortable junction without tension. Billroth I also has the advantage of merging the treatment of the duodenal stump and the restoration of gastro-intestinal continuity into one procedure. Though it resembles Billroth II in that no sphincter takes the place of the pylorus (the fashioning of new sphincters is not numbered among the triumphs of surgery), it does offer the food leaving the stomach remnant some chance of receiving bile and pancreatic juice at an appropriate moment. Technically, then, Billroth I is a better operation for gastric ulcers than Billroth II. Functionally also it seems to be superior. Though post-gastrectomy symptoms arise, these are less common and less severe than after Billroth II; and there is much less tendency for patients to lose weight. In careful analyses MOLONEY,[1] and now Dr. SCHMITZ and his colleagues whose report we publish this week, give further evidence of its functional superiority.

For the treatment also of duodenal ulcer both SCHMITZ et al. and MOLONEY enthusiastically advocate the Billroth-I operation; but here its value is rather less certain. Certainly their mortality figures bear comparison with, and their functional results surpass, the best series of Billroth-II operations. For the surgeon well versed in its technique, Billroth I is doubtless an excellent operation for duodenal ulcer; but for those with less experience there is the possible difficulty of securing a sufficient length of sound duodenum for anastomosis to the stomach. MOLONEY states that if there is enough duodenum to close there is enough to anastomose, and this seems reasonable. Yet there are times when the duodenal closure in a Billroth II is sufficiently insecure to cause a surgeon who is prejudiced against drains to put a substantial piece of rubber down to the duodenal stump. In such situations, and where duodenal closure cannot be achieved at all and a tube must be sewn into the duodenum, MOLONEY might rightly contend that it is still easy to abandon Billroth I for Billroth II. But there are two situations in which a Billroth-I operation for duodenal ulcer would be dangerous. In large long-standing duodenal ulcers the first half of the duodenum may be so shortened and deformed by scar tissue that the ampulla of Vater is pulled much nearer to the pylorus than the surgeon supposes; rarely the ulcer even surrounds the ampulla. No experienced surgeon would try to remove such an ulcer, far less to do a Billroth I; but the snag remains for the young and inexperienced, who may believe that no duodenal ulcer is technically irremovable. The second danger is abnormal accessory pancreatic ducts. These sometimes enter the duodenum at the junction of the first and second parts, and during extensive duodenal mobilisation they may be divided without the surgeon being aware of the accident; the patient may then die of peritonitis if no fistula forms. MOLONEY would justly reply that one would need to mobilise the duodenum anyhow to close it, and the risk of unwittingly dividing an accessory pancreatic duct would be equally great. Nevertheless surgeons are sometimes content to close scarred duodenum and insert a drain, whereas if a Billroth-I anastomosis were contemplated they would mobilise the duodenum further to secure a less scarred wall.

There is a strong case for using the Billroth-I operation almost always for gastric ulcers. SCHMITZ and his colleagues and MOLONEY have stated a good case for the same operation also in the treatment of duodenal ulcer, but this contention should be considered cautiously: not every duodenal ulcer is removable.

1. Moloney, G. E. *Brit. med. J.* 1954, i, 1186.

Diagnosis and Treatment of Adrenocortical Disorders

THE two commonest disorders of adrenocortical function—chronic insufficiency (Addison's disease) and chronic overactivity (Cushing's syndrome)—were discussed by Dr. GEORGE W. THORN at the Royal Society of Medicine on June 23. Dr. THORN, who is Hersey professor of physic in Harvard University and physician-in-chief at the Peter Bent Brigham Hospital in Boston, has combined much original investigation with extensive clinical experience.

In chronic adrenal insufficiency, he said, a common early manifestation is loss of weight; and weakness, pigmentation, and loss of weight are the usual presenting features—sometimes but not always associated with hypotension. Nausea, vomiting, or diarrhœa occurs in some cases, and Addison's disease should be considered in the differential diagnosis of any vague unexplained abdominal symptoms. Before surgical treatment any patient with urogenital tuberculosis should be carefully investigated to exclude adrenal involvement.

Investigations by which to confirm the diagnosis range from simple, non-specific, indirect screening tests to more complicated direct measurements of adrenocortical hormones. A straight radiograph of the abdomen may show adrenal calcification, but this is not always present; conversely in some cases with normal adrenal function there is calcification above the renal shadows. The inability of patients with chronic adrenal insufficiency to excrete a water load has provided the cheapest and easiest screening test.[1] After an overnight fast a normal person, given 9 ml. water per lb. body-weight (20 ml. per kg.), will excrete 80% of the water during the next four hours, whereas almost all patients with Addison's disease show a much impaired diuresis. If the diuresis is impaired, Addison's disease is probably present, but further investigation is required to establish the diagnosis. The next step is to study the eosinophil response after an intramuscular injection of 25 units of corticotrophin (A.C.T.H.).[2] A fall in eosinophils of 50% or more indicates normal adrenal function; but failure to respond does not necessarily signify Addison's disease, because intramuscular corticotrophin provides a very variable stimulus to the adrenal cortex and normal subjects may show little increase in circulating adrenocortical steroids after such an injection.[3] Thus a negative test calls for further investigation. The urinary 17-ketosteroid excretion is usually less than 1 mg. per day in women with Addison's disease and less than 5 mg. in men (this amount is derived from the testes). Estimations of adrenocortical hormones in blood[4] are too time-consuming and difficult for routine purposes, but recently two methods have been described for urine assays. The first,[5] developed in Dr. THORN's laboratory and subsequently slightly modified, is fairly simple and reliable. The second, described in these columns by Dr. NORYMBERSKI and his colleagues,[6] promises well but is still suffering teething troubles.[7] If low or zero values are found in a twenty-four-hour urine sample, Addison's disease is probably present. Final proof of the diagnosis, and differentiation from Simmonds's disease, is obtained by studying the adrenal response to prolonged stimulation with corticotrophin.[8] Either 40 units in a gelatin menstruum is given twelve-hourly for two days or 20 units is infused in 500 ml. saline for eight hours on two successive days. In patients with Addison's disease there is no increase in urinary 17-ketosteroids or adrenocortical steroids; in normal persons there is a pronounced rise; and in patients with Simmonds's disease there is some rise, though less than in normal people.

The foundation stone of treatment is cortisone[9] or hydrocortisone, the exact amount depending on the severity of the disorder and the degree of adrenal atrophy. Many patients improve miraculously on 12·5 mg. daily by mouth: others require 25 mg., and a few 37·5 mg. During intercurrent infections larger doses may be required, and each patient should have an extra supply for use in an emergency. Because of relatively weak salt-retaining properties, the cortisone should be supplemented by 5 g. of sodium chloride in enteric-coated capsules given in divided doses after meals. On this régime some patients remain hypotensive and may feel dizzy on standing; others, although feeling quite well, are prone to hypotension and circulatory collapse if some gastro-intestinal disturbance increases their fæcal excretion of sodium. In such cases deoxycortone acetate in oil is given by intramuscular injection, the dosage (0·5–5 mg.) being judged by the patient's ability to gain and maintain a steady weight without becoming hypertensive or œdematous. Injections are a nuisance to the patient and may, after stabilisation, be replaced by implantation of pellets of deoxycortone or by monthly injections of the trimethyl acetate ester of deoxycortone which has a long-continued action. For each milligramme of deoxycortone acetate required daily to maintain the patient during the stabilisation period and after, 30 mg. of the trimethyl acetate ester is given every twenty-eight days.[10] No two patients can be treated quite the same, and each patient may vary from time to time in his requirements. Further advances in treatment are likely in the near future. It has now been discovered that if a halogen ion is substituted in the cortisone or hydrocortisone molecule at the C-9 position the action of the hormone is much enhanced.[11] Elsewhere in this issue Dr. CALLOW, Miss LLOYD, and Dr. LONG describe experiments which show that in several different tests 9α-chlorohydrocortisone acetate is more active than either cortisone or hydrocortisone. THORN has found that 9α-fluorohydrocortisone acetate is even more potent than the chloro compound. A patient with Addison's disease can be maintained in salt balance on as little as 0·25 mg. fluorohydrocortisone acetate per day by mouth, and in a normal person the sodium-retaining activity of 2 mg. of the fluoro derivative infused over an eight-hour period was apparently equivalent to 100 mg. hydrocortisone given in the same manner. A new adrenocortical hormone, aldosterone,[12] with powerful sodium-retaining properties, may further alter the treatment of Addison's disease. Dr. MACH and his

1. Robinson, F. J., Power, M. H., Kepler, E. J. *Proc. Mayo Clin.* 1941, **16**, 577.
2. Thorn, G. W., Forsham, P. H., Prunty, F. T. G., Hills, A. G. *J. Amer. med. Ass.* 1948, **137**, 1005.
3. Bayliss, R. I. S., Steinbeck, A. W. *Brit. med. J.* 1954, i, 486.
4. Nelson, D. H., Samuels, L. T. *J. clin. Endocrin.* 1952, **11**, 1021. Bayliss, R. I. S., Steinbeck, A. W. *Biochem. J.* 1953, **54**, 523.
5. Reddy, J. W., Jenkins, D., Thorn, G. W. *Metabolism*, 1952, **1**, 511.
6. Norymberski, J. K., Stubbs, R. D., West, H. F. *Lancet*, 1953, i, 1276.
7. Brooks, R., Clayton, B. Communication to the Society for Endocrinology, 1954.
8. Renold, A. E., Jenkins, D., Forsham, P. H., Thorn, G. W. *J. clin. Endocrin.* 1952, **12**, 763.
9. See Fourman, P., Horler, A. R. *Lancet*, 1954, i, 334.
10. Thorn, G. W., Jenkins, D., Arons, W. L., Frawley, F. *J. clin. Endocrin.* 1953, **13**, 957.
11. Fried, J., Sabo, F. F. *J. Amer. chem. Soc.* 1953, **75**, 2273; *Ibid*, 1954, **76**, 1455.
12. Simpson, S. A., Tait, J. F., Wettstein, A., Neher, R., Euw, J. V., Schindler, O., Reichstein, T. *Experientia*, 1954, **10**, 132.

colleagues [13] in Geneva have treated chronic adrenal insufficiency with as little as 150–300 μg. of this substance by mouth, and Dr. THORN's preliminary experience suggests that weight for weight aldosterone and fluorohydrocortisone may be equally potent in maintaining electrolyte balance.

Overactivity of the adrenal cortex is more difficult to diagnose than underactivity.

In its classical form Cushing's syndrome can be diagnosed from the end of the bed, but less severe cases present a diagnostic problem. All too often an obese middle-aged woman with glycosuria and a rather excessive growth of hair on the chin is in danger of being subjected to total or partial bilateral adrenalectomy, as a case of Cushing's syndrome. The diagnosis should be considered in any patient with hypertension, diabetes, osteoporosis, menstrual abnormalities, and easy bruising. Most patients with true Cushing's syndrome have thin skin of poor quality; their extremities are slender, never fat; and most show psychiatric disturbance which makes their management difficult. The fasting blood-sugar level may be normal, but usually administration of 50 g. of glucose reveals diminished tolerance. The diagnosis can be proved only by direct hormone assays. No simple screening test is available. In most instances the eosinophil-count is less than 100 per c.mm. The urinary excretion of 17-ketosteroids depends somewhat on the underlying lesion. Such excretion is usually much increased when the lesion is an adrenal carcinoma, normal or moderately increased when it is hyperplasia, and normal or reduced when it is a benign adenoma. Thus an excretion exceeding 25–30 mg. per day suggests Cushing's syndrome, but normal or low levels do not exclude this diagnosis. The level of adrenocortical hormones in the plasma or urine is usually raised but not always strikingly above the upper limit of normal, and repeated estimations may be required to make certain that the level is indeed abnormally high. Once the diagnosis has been established, it is important to decide whether the condition is due to a carcinoma, adenoma, or hyperplasia of the adrenal glands. Presacral injection of oxygen, which is less dangerous than perirenal insufflation of air, when combined with intravenous pyelography may help in defining an adrenal tumour. Adenomata, however, are often small and undetectable by the best radiographic techniques; false positive results also occur. Some help may be had from the response to corticotrophin given in a gelatin menstruum or by intravenous infusion as already described. In cases of adrenal carcinoma the excretion of 17-ketosteroids or adrenocortical hormones increases no further; in bilateral hyperplasia the excretion of both types of hormone increases greatly; while in adrenal adenoma it does not usually increase, but rarely some benign tumours are under the influence of corticotrophin and show increased secretory activity.

The best treatment of Cushing's syndrome is still undecided. Because substitution therapy is now feasible, total or partial bilateral adrenalectomy is technically possible and even safe in expert hands; and for carcinoma or adenoma surgical extirpation is the treatment of choice. When there is bilateral hyperplasia causing severe osteoporosis, hypertension, or mental changes the most suitable treatment is total or partial bilateral adrenalectomy; but in milder and less pressing cases X-irradiation of the pituitary giving 4000r should be tried first. At the Mount Sinai Hospital, New York, Dr. L. J. SOFFER steers a middle course, and satisfactory improvement has been obtained by removal of the whole of one adrenal followed by pituitary irradiation.

13. Mach, R. S., Fabre, J., Duckert, A., Borth, R., Ducommun, P. *Schweiz. med. Wschr.* 1954, **84**, 497. See *Lancet*, 1954, i, 1226.

Despite advances, to which Dr. THORN has contributed so greatly, many questions remain unanswered. We still do not know whether adrenal hyperplasia is due primarily to a disorder of the pituitary, whereby too much corticotrophin is secreted, or whether the pituitary is insensitive to the inhibition normally imposed on it by high plasma levels of adrenocortical hormones. Nor do we know what part, if any, the responsiveness of the tissues to adrenal steroids plays in the development of the syndrome.

Saskatchewan and Sheffield

IN this country we tend to be like SHAW's Britannus, who "thinks that the customs of his tribe and island are the laws of Nature," and it hardly occurs to us that there might be a hospital service without a shortage of beds. Hence it comes almost as a shock to learn that, in proportion to population, the hospitals of the Canadian province of Saskatchewan admit three times as many patients as ours and that they do not have waiting-lists.

One explanation of the difference is that in Saskatchewan the hospitals accept many illnesses less serious than those usually admitted in this country. Thus in 1952 acute pharyngitis and tonsillitis (including tonsillectomy) was the third biggest group of admissions, and both pneumonia and influenza were high on the list. It is likely, too, that in sparsely populated areas long distances necessitate the admission of many patients who in this country would be treated in the outpatient or casualty departments. Thus the pattern of admissions corresponds more closely to that of a nurses' sick-bay than to general medical and surgical wards in this country. In 1952 the average length of stay in hospital was only 10·5 days compared with 22·06 for hospitals in England and Wales calculated on the same basis: three-quarters of the patients stayed less than 10 days (their average being 5·02), and for the quarter who stayed more than 10 days the average was only 25·8 days. These figures would again be less different from ours if Saskatchewan, like Britain, had a fully comprehensive service; for, though some 93% of the population of 861,000 are insured against the cost of inpatient care up to 60 days in the year, the treatment of tuberculosis and mental disease is excluded, as also are outpatient services and blood for transfusion. What is particularly interesting, however, is the way in which the supply of hospital beds has kept pace with requirements. Since the service started in 1947 big efforts have been made to reduce or eliminate overcrowding, which "increases the fire hazard, adds to the risk of cross-infection, and lowers the standard of patient care, as well as making it difficult to provide for emergency cases." The 2966 beds in existence at the beginning of 1947 had risen to 5692 by the beginning of last year—an increase which seems phenomenal by English standards since the war.

By way of comparison, it is instructive to turn to the first quinquennial report of the Sheffield Regional Hospital Board, from 1947 to 1952. With the board of governors of the teaching hospitals, the Sheffield regional board provides 16,893 available acute and chronic beds (excluding tuberculosis and mental diseases) for a population of 4,134,444—barely 60%

of the Canadian provision. There is "severe overcrowding" in the accommodation for the chronic sick and it has been estimated that a further 6110 beds are needed, as well as very considerable improvements in the outpatient departments:

"More and more patients are necessarily being investigated in the out-patient department, which has really become the focal point of the hospital. It is true to say, however, that there is not one adequate department in the Region. Most of them are badly designed and too small for present-day needs. Probably one of the most urgent tasks awaiting the Board is the expansion of the existing premises and in some instances the provision of new departments. The main deficiencies are the inadequate consulting room accommodation and dressing rooms for the patients and the absence of proper record departments and waiting space. In many cases, the out-patient department serves also as a casualty unit resulting in much confusion on busy days."

Though physical conditions were much improved in these first five years of the service, the regional total of beds actually decreased by 789; and though, despite this, admissions increased by nearly 30,000 (reaching 244,559 in 1952) the total waiting-list rose by 10,000 to 49,948. Figures for waiting-lists cannot be taken at their face value, but this one is correctly proportional to the national waiting-list and is therefore in no way exceptional.

That Saskatchewan has been able to achieve much more than post-war Britain in expanding hospital care is not surprising; but the comparison does suggest that, so far from being wildly excessive, our hospital resources are well below what would normally be provided. In this country we have no need to admit our outpatients, and we think that, given domestic help and good general practitioners, many ill people are best treated in their own beds at home. Nevertheless, against the background of Saskatchewan's figures, the Sheffield Regional Hospital Board's wish to increase its beds eventually by 6000 can be readily understood. Sheffield's immediate plans for capital works in 1954–55 included 90 schemes, of which 38 were estimated to cost over £10,000, with an aggregate of £2,169,850; and the Ministry's expected allocation for these was only £75,000. Some of the projects already deferred include: Pastures Hospital, Derby (remodelling of a boiler plant); Melton Mowbray Hospital (new maternity unit and accommodation for resident nurses); Hinckley and District Hospital (maternity unit); The Towers Hospital (acute unit); Hawtonville Hospital (improvements); Highbury Hospital (operating-theatre facilities and remodelling of boiler plant and engineering services); Nottingham and Midland Eye Infirmary (extension to outpatient and casualty department); City Hospital (X-ray department); and Harlow Wood Hospital (accommodation for resident nurses). The Sheffield scheme has been dubbed "unrealistic" by the Ministry; but to a Canadian observer it would probably seem that what is wrong is not the scheme but our failure to find the money for it. Since the inception of the National Health Service only about £35 million has been spent on capital works in hospitals, representing barely 3% of maintenance costs. Housing and schools have very properly had priority, but the time has now come when we can fairly ask for some expansion of the programme for improving existing hospital buildings and even for building new hospitals.

Annotations

CANCER RESEARCH

NOT so very long ago research into the causes of cancer centred mainly on patient and methodical work by the morbid histologist and the accumulated observations of the watchful clinician. Latterly attention has become focused less on the tumour as a whole and more on its component cells; and there has been increasing dissatisfaction with methods by which only the dead cell can be studied. The introduction of radioactive isotopes opened up new prospects in cell physiology; workers in the field of cancer research were early interested in this development, and the latest report of the British Empire Cancer Campaign [1] indicates clearly the diversity of the lines of investigation which it has made possible.

In the diagnosis of thyroid cancer radio-iodine is now used almost routinely, but so far equal success has not attended the diagnosis of tumours at other sites by this kind of investigation. A study at the Cancer Hospital of the uptake of P^{32} by breast cancer shows little prospect of this providing a diagnostic test either of tumour activity or of its extent of spread. Work has continued on the localisation of cerebral tumours, with K^{42} as the trace substance. The relatively low uptake by the brain has made necessary heavy lead screening of the rest of the body, and accurate localisation is to be expected in rather less than half the cases. In investigations involving the use of radioactive materials increasing demands are being made of the medical physicist, who continues to perfect existing techniques and to elaborate new ones. The scintillation crystal is now so much more sensitive than the gas counter that the distribution of an isotope in a patient can be estimated after administration of as little as 10 μC. Even more interesting are developments in autoradiography. This technique has already proved immensely valuable in the investigation of the thyroid gland in health and disease, and it is being applied increasingly in other researches. In Oxford, for example, by a method with a resolution which has revealed the disposition of the isotope in the chromosomes of dividing cells in tissue-culture, the synthesis of nucleic acid has been timed in relation to the cell cycle. Workers in Birmingham, following the intracellular localisation of C^{60} in laboratory animals, have shown commendable industry and ingenuity in exposing the sensitive film at the bottom of a mineshaft, thus reducing the number of background tracks and increasing the sensitivity of the method a hundredfold.

The crudity of our present methods of treating cancer must be freely acknowledged. But radioactive isotopes seem to hold out some promise of more precise therapy. In the treatment of thyroid cancer early high hopes of I^{131} have not been realised, because the malignant cells do not necessarily take up iodine; but the results have been encouraging enough to justify pressing on with this form of therapy. It is disappointing to find no mention in the report of notable progress in the treatment of cancer at other sites by comparable techniques. P^{32} (in the treatment of polycythæmia) is the only other isotope which can be said to have established itself as a therapeutic agent. By comparison the other therapeutic uses of radio-isotopes seem sadly crude. Needles loaded with CO^{60} and radioactive tantalum wire have some advantages in the treatment of cancer at certain sites, but only as an alternative to the standard methods of interstitial irradiation by radium. The same is true of P^{32} in the treatment of skin cancer, and of Br^{82} in the control of bladder cancer. Even the intraperitoneal injection of Au^{198}, which becomes fixed in the serous coat, is too haphazard in its effect to be of much value, since dispersal

1. British Empire Cancer Campaign: Annual report, 1953. Issued by the Campaign, 11, Grosvenor Crescent, Hyde Park Corner, London, S.W.1.

of the isotope depends mainly on the changing pressures inside the peritoneal cavity.

In forecasting the most fruitful line of inquiry into the cause of cancer, one man's guess is as good as another's. It seems not unlikely that it is to the intensive study of cell behaviour under widely varying conditions that we can most hopefully look for further progress. But it is heartening to find that the B.E.C.C. is encouraging work in almost every branch of medicine and biology. Judging from the projects recorded in the pages of this report, the contributions of the radiophysicist and biophysicist will feature increasingly in this widening field of inquiry.

THE CUP THAT CHEERS

THE popularity of caffeine-containing beverages in many different civilisations is testimony to the solace and stimulus which mankind derives from this delectable alkaloid. But caffeine has always had its opponents, one of whom, Professor Steyn, of the University of Pretoria, has lately marshalled the case against it.[1]

Much of the evidence that Steyn cites is based on the results of experiments in which large doses of caffeine were given to laboratory animals; and the clinical application of such findings must always be somewhat conjectural. Thus, when dogs are given caffeine by mouth in doses of 50–400 mg. per kg. body-weight the plasma-prothrombin time falls.[2] Steyn remarks that this "appears to have brought conclusive proof that the ingestion of caffeine most probably aggravates the already serious state of thrombosis in man." But this conclusion is not justified on the evidence presented. Steyn is on firmer ground when he discusses the relation between caffeine and peptic ulcer. Roth et al.[3] gave 250 mg. of caffeine dissolved in 200 ml. of water to normal persons and to ulcer patients after an overnight fast, and demonstrated a copious flow of acid gastric juice. In most of the normal people this was short-lived, whereas in most of the patients with ulcer it continued longer. Similar results were obtained with caffeine-containing beverages as ordinarily served, but the addition of sugar and cream to coffee almost halved the secretory response. Merendino et al.[4] obtained similar results after giving two cups of strong black coffee to people who had fasted overnight. The experimental production of gastric ulcers in cats and guineapigs by the repeated daily injection of large amounts of caffeine [4–6] can be dismissed by the clinician as irrelevant.

Steyn frequently sees children drinking large quantities of soft drinks in warm weather; and he would like it to be better known that many of these beverages contain appreciable quantities of caffeine. The caffeine content of one of the best known of these cola drinks is stated to be 33 mg. per bottle, and a similar well-known drink contains twice this amount.[3] (This compares with an estimate of 100–120 mg. of caffeine per cup of coffee, though Steyn thinks that in South Africa the true figure for coffee is probably below 30 mg. per cup.) The young man admitted to hospital with a perforated peptic ulcer after drinking 150 bottles of an iced cola drink during five warm August days [4] is an extreme example, and the danger from cola drinks in this country is probably slight. Professor Steyn, however, is right in saying that in certain soft drinks larger quantities of caffeine are consumed, especially by children, than in coffee, tea, or cocoa, and that those parents who do not wish their children to take caffeine should be informed of its presence in such drinks.

All this does not amount to a very damaging brief against caffeine-containing drinks. The only way of proving that excessive drinking of tea and coffee is harmful is to compare the prevalence of the various morbid conditions to which they are alleged to give rise, in large groups of people comparable in all respects other than consumption of caffeine. This is the method by which the relation between cigarette-smoking and lung cancer was established. But immense labour would be involved, and the prima-facie case against caffeine does not seem strong enough to justify this. Meanwhile the addicts among us will continue to rely on the reassurance of personal experience, as did Samuel Johnson. When attacked by a certain Mr. Jonas Hanway for his habit of tea-drinking, Johnson, than whom "no person ever enjoyed with more relish the infusion of that fragrant leaf," declared that Mr. Hanway had "considered the effects of Tea upon the health of the drinker, which, I think, he has aggravated in the vehemence of his zeal, and which, after soliciting them by this watery luxury, year after year, I have not felt."

BED REST AFTER MYOCARDIAL INFARCTION

MOST clinicians agree on the importance of bed rest after myocardial infarction, though they are mindful that in old persons complete immobilisation has its own hazards from venous stasis. Lary and de Takats [1] have drawn attention to arterial embolism in patients who were on their feet shortly after a cardiac infarction. Of eight such patients, in whom embolism to the lower limb occurred 5–30 days after the infarct, five had not been kept in bed at all: and in two of these the embolus occurred within 6 days of the infarct. In four patients the infarction was not diagnosed until after the embolus had occurred; but all except two had a clinical episode consistent with infarction—either chest pain or sudden dyspnœa. One had complained only of "dizziness," while another apparently had a "silent" infarct following cholecystectomy. There was electrocardiographic evidence of infarction in all but two cases. In one of these necropsy revealed multiple old infarcts. The other patient had auricular fibrillation, with no clear-cut history suggestive of infarction; this case did not come to necropsy, so that embolism could not definitely be attributed to myocardial infarction.

Failure to enforce bed rest seems to have been due as much to non-recognition of the myocardial infarction as to deliberate early ambulation after it. There can be little doubt that after a major infarction bed rest for at least 6 weeks is advisable, although variations, such as Levine's [2] "chair treatment," may sometimes be of value. The report by Lary and de Takats re-emphasises that myocardial infarction may show itself in several different ways, particularly in the elderly, and that sudden dyspnœa, syncope, and dizziness may be presenting symptoms without much pain.[3] Landman et al.[4] found that 11% of 255 myocardial infarcts were "silent." It is probably rare for infarction to be unaccompanied by any symptom whatever, although old people may give a vague history because their memory for the event is clouded. Infarction may present as angina of effort,[5] and the sudden onset of this symptom is an indication for rest in bed.

Lary and de Takats are not convinced of the value of anticoagulants in the prevention of arterial embolism following myocardial infarction. (There is a growing weight of opinion against administering anticoagulants to patients with a clinically small infarction, short-lived pain, and no hypotension or congestive heart-

1. Steyn, D. G. Caffeine-containing Beverages and Human Health. Pretoria, 1954.
2. Field, J. B., Lassen, E. G., Spero, L., Link, K. P. *J. biol. Chem.* 1944, **156**, 725.
3. Roth, J. A., Ivy, A. C., Atkinson, A. J. *J. Amer. med. Ass.* 1944, **126**, 814.
4. Merendino, K. A., Judd, E. S., Baronofsky, I., Litow, S. S., Lannin, B. G., Wangensteen, O. H. *Surgery*, 1945, **17**, 650.
5. Judd, E. S. *Bull. Amer. Coll. Surg.* 1943, **28**, 46.
6. Roth, J. A., Ivy, A. C. *Gastroenterology*, 1944, **2**, 274; *Surgery*, 1945, **17**, 644.

1. Lary, B. G., de Takats, G. *J. Amer. med. Ass.* 1954, **155**, 10.
2. Levine, S. A., Lown, B. *Trans. Ass. Amer. Phycns.* 1951, **64**, 316.
3. See also Papp, C. *Brit. Heart J.* 1952, **14**, 250.
4. Landman, M. E., Anholt, H. S., Angrist, A. *Arch. intern. Med.* 1949, **83**, 665.
5. Wade, E. G., Morgan Jones. *Brit. Heart J.* 1951, **13**, 319.

failure.[6]) In the "silent" or "quiet" infarct the severity may be difficult to gauge; but, whatever the decision on giving anticoagulants, rest in bed is essential.

SMOKING AND CANCER OF THE LUNG

THE build-up of clinical and epidemiological evidence which culminated in the well-controlled studies of Doll and Bradford Hill [7] and Wynder and Graham [8] convinced most of us of the chill reality of the association between smoking habits and disposition to cancer of the lung. But, as we have already pointed out,[9] the historical or retrospective approach used in these and similar studies is open to criticism which may appear pedantic but cannot be ignored. Bias in the observer may have an appreciable effect on the frequency of eliciting a history of heavy smoking; the cancer patient himself may propose his smoking habits as an innocent cause of his respiratory symptoms, and these symptoms themselves may in turn change his smoking habits. The experience of Doll and Hill with patients suffering from intrathoracic growths which later proved to be non-malignant showed that these objections can be overstated. Nevertheless, since, as Dr. Graham remarks,[10] human experiments are impossible, these objections are important enough to make "prospective" inquiries an essential step in the proof of the carcinogenic qualities of tobacco smoke.

The basic idea is quite simple. A large and reasonably homogeneous group of men are catechised about their smoking habits, present and past. The information is filed and the deaths occurring in subsequent years are collected. A comparison of the death-rates in groups with contrasting smoking habits will then confirm or deny the suggestions implicit in the results of the "historical" approach. In his family studies of the relation between social and personal characteristics and longevity Pearl [11] showed that heavy smoking was associated with excessive mortality-rates in middle life. Unfortunately he gave no analysis by cause of death, and his genealogical methods were not, strictly speaking, prospective studies. A more satisfying development of this theme was reported last week by Dr. Richard Doll and Professor Bradford Hill.[12] In October, 1951, they asked doctors in the United Kingdom to classify themselves according to whether they were at that time smokers, whether they had given up smoking, or whether they had never smoked as much as one cigarette a day for as long as one year. Supplementary questions on the duration and manner of smoking tobacco were put to both present and previous smokers. To this questionary, 24,389 replies were received from men aged 35 years and over and in the twenty-nine months which have elapsed, the Registrar-General has reported on the cause of death of 789 of these doctors. Of these 789 deaths, 35 were certified as due to lung cancer; in 1 other, lung cancer was a contributing cause. Inquiries from the attending physician showed that the diagnosis could be given with certainty in at least 33 of these patients. Other causes of death were also separated out in the analysis, and age-standardised death-rates are given for six groups of diseases among non-smokers, moderate, and heavy smokers.

The results are impressive. There is a clear gradient in lung-cancer mortality from the non-smoking to heavy-smoking groups. There is also a rise, although less steep, in the death-rate from coronary thrombosis; but no appreciable gradient appears in other forms of cancer, other cardiovascular diseases, respiratory diseases, and all other causes of death. In short, the results of this prospective inquiry confirm the indications so strongly given by Hill and Doll's previous retrospective controlled study, and the methodological objections already noted have been effectively answered. With commendable caution, the report has been called preliminary, although, with the possible exception of the trend in the respiratory-disease group, the ultimate results should differ little from the pattern now observed.

In these prospective studies, publication of early results is important in diminishing the dangers of bias to which they, too, may be subject. Increasingly, a history of heavy smoking may come to be taken by physicians certifying death as a diagnostic indicator of lung cancer, and the association between smoking and lung-cancer mortality may thus become unduly inflated. Again, the very candour of reports such as those of Doll and Hill who thank "the survivors of the 40,000 men and women" who make them possible, may in time free some of the heavy smokers of 1951 from the tobacco habit. For these reasons, contemporary and similar studies in other countries are of particular value. American press accounts of a report by Dr. Cuyler Hammond and Dr. Daniel Horn of the American Cancer Society to the recent meeting of the American Medical Association suggest that they are reaching similar conclusions. They instituted a forward inquiry through lay members of the American Cancer Society, who were asked in 1951 to report on current smoking habits and subsequent mortality experience of about ten of their male acquaintances between the age of 50 and 69. Like Pearl, they find that the total death-rate among men between 50 and 64 is more than twice as high as among non-smokers of the same age. Like Doll and Hill, they find excessive death-rates for lung cancer and coronary thrombosis in the heavy-smoking group; they suggest that the lung-cancer death-rate is at least five times as high as the rate for non-smokers. On the other hand, they also report an excess in cancer of throat, kidneys, stomach, and intestinal tract which is not in line with the British findings. Although much larger, the American experience is based on a socially less homogeneous group, which, being composed of friends of members of the American Cancer Society, may contain an unduly high proportion of persons with a familial history of that disease. Informed comment must await the publication of detailed results. Meanwhile, we have, in the Doll and Hill report, one more sound reason for ordering the priorities among our next New Year's resolutions.

RATIONING AND SPECIAL DIETS

THIS week sees the demise of the Medical Research Council's Food Rationing (Special Diets) Advisory Committee. Formed in 1940 at the request of the Ministry of Food, the Ministry of Health, and the Department of Health for Scotland, it was asked to advise on any modifications of the ordinary civilian rations which might be necessary on medical grounds for invalids and others for whom special diets had been prescribed. Now that civilian rationing is ended, its task is complete.

No system of rationing can ever be entirely equitable. A food that is properly regarded as a pleasant luxury for the majority may be almost a necessity for a few. The dietetic problems presented by clear-cut physical disorders such as diabetes, steatorrhœa, and tuberculosis are difficult enough; but, when food-supplies were limited, such indefinite conditions as food allergies and food neuroses posed even more awkward individual problems for which a judicious blend of scientific knowledge and tact was needed. Some of the details of the committee's work have already been recorded.[1]

There are always in this country a considerable number of food cranks, some of whom are well informed and

6. See *Lancet*, 1954, i, 917.
7. Doll, R., Hill, A. B. *Brit. med. J.* 1950, ii, 739.
8. Wynder, E. L., Graham, E. A. *J. Amer. med. Ass.* 1950, **143**, 329.
9. *Lancet*, 1952, ii, 667.
10. Graham, E. A. *Lancet*, 1954, i, 1305.
11. Pearl, R. *Science*, 1938, **87**, 216.
12. Doll, R., Hill, A. B. *Brit. med. J.* 1954, i, 1451.

1. History of the Second World War. Medical Research. Edited by F. H. K. Green and G. Corell. H.M. Stationery Office, 1953.

intelligent; and not a few doctors hold heterodox views about various aspects of nutrition. The committee's work was made more difficult by the weakness of the scientific basis on which much nutrition teaching rests: there is room for many genuine differences of opinion and the unorthodox are seldom wholly wrong. So not unexpectedly the committee came in for both public and private criticism. But some of this was very ill informed, particularly during the years immediately after fighting stopped. Restrictions which had been quietly borne during the war were sometimes thought unbearable when peace returned. Yet, as everybody now knows, the end of the war could not immediately change all the many agricultural and economic factors which gave rise to shortages.

The committee gradually won the respect not only of the medical profession but of the great majority of those of the public whom its decisions affected. This was partly due to the soundness of the general policies which it laid down; but equally valuable was the way in which individual members of the committee gave their time and thought to solving, as far as they were able, the problems of individual doctors and their patients. During the fourteen years of the committee's life Sir Edward Mellanby and Sir Harold Himsworth acted as chairmen, and Professor L. S. P. Davidson, the late Viscount Dawson of Penn, Sir Francis Fraser, Lord Horder, Dr. R. D. Lawrence, Prof. R. A. McCance, Prof. M. L. Rosenheim, Dr. Norman Smith, and the late Sir James Spence served as members. A difficult task has been completed with distinction.

LIVER AND METABOLISM IN MALARIA

JUST sixty years ago Marchiafava and Bignami [1] described the histological lesions in the liver in malaria. Dudgeon and Clarke [2] and later Klotz [3] again gave good descriptions of this picture, which was completed six years ago when Shortt and Garnham [4] discovered the tissue phase of the parasite in the prepatent stage.

Klotz examined the livers of 12 fatal cases of pernicious malaria, and described in detail the macroscopic and histological appearance of "reversed nutmeg." Microscopically there is a zone of liver-cell necrosis and fatty infiltration immediately around the centrilobular vein. The liver cells are sometimes atrophied or shrunk, and commonly mitoses are seen among them. The central vein and the capillaries round it are engorged with blood and infiltrated with a few polymorphs and mononuclear cells, but there are no distinct inflammatory foci. Kupffer cells stand out hypertrophied and engorged with parasitised red cells, and hæmosiderin can be seen in both Kupffer and parenchyma cells. The mid-zone is seldom involved, and the peripheral cells are normal. This picture is easily distinguishable from that in yellow fever, where necrosis begins sharply in the mid-zone and always leaves a ring of normal cells round the central vein.

Clinically, the association of hepatomegaly with malaria in undernourished Africans is well known. Black [5] found in the South-west Pacific a close correlation of prevalence and degree of hepatomegaly with malaria endemicity in the first two decades of life. Enlargement, tenderness, and functional impairment of the liver occur in well-nourished persons with any of the four naturally acquired infections. Much work on this subject has been done in patients undergoing malarial therapy,[6] and in Servicemen infected with *Plasmodium vivax* in the Pacific.[7] Two further reports, just published, correlate this metabolic dysfunction with the histological changes in the liver. McMahon et al.[8] did peritoneoscopic liver biopsies in 34 of 54 Servicemen with *P. vivax* infection relapsing on an average seven months after suppressive treatment was discontinued. Their patients were treated with chloroquine and given a high-protein, high-calorie, high-vitamin, and medium-fat diet. Sections of specimens taken before therapy showed all the histological features described above, and further biopsies on 25 of the patients four weeks after cure showed that the picture had returned to normal. Liver-function tests were done weekly; but, although all were abnormal to some extent, there was little correlation with the severity of the clinical or microscopic disturbance. Loomis et al.[9] also found a high prevalence of positive liver-function tests in 75 ex-Servicemen from Korea with *P. vivax* infection. They point out that flocculation tests (which reflect disturbances of plasma-proteins) are more commonly and more grossly abnormal in these cases than synthesis and dye-excretion tests, which become positive with parenchymatous damage.

Centrilobular necrosis is found in many pathological conditions: poisoning with chloroform, carbon tetrachloride, phosphorus, or histamine; some allergic states; hyperthermia; right-sided heart-failure; anæmias; and states of chronic low oxygen tension. Himsworth [10] suggested that in these conditions swollen parenchymal cells by obstructing the blood-flow diminished both the oxygen tension and the nutrition of the centrilobular cells. Maegraith et al.[11] postulate that in these conditions hepatic venous spasm slows the blood-flow, and Andrews [12] has tried to demonstrate areas of spasm in the hepatic venous tree by perfusion studies of the liver in situ.

Further work on the metabolic economy of the parasite may throw more light on this question. Brown [13] in 1911 showed that the parasite splits the hæmoglobin of its host cell into hæmatin and globin. Most of the hæmatin is stored and slowly oxidised to hæmosiderin, which can be used again by the host. The globin is hydrolysed or phosphorolysed and about half the amino-acids so produced are used to make the three proteins present in the parasite.[14] Globin, however, contains 1% methionine (most proteins contain 3–4%), so the parasite supplements its requirements from the host plasma-methionine. That the parasite relies on both dietary methionine and dietary *p*-aminobenzoic acid is shown by the suppression of infection when the host is deprived of these substances.[15] Starvation does not prevent the production of host antibody-protein, which fortunately takes priority over parasite protein synthesis. Most of the increase in plasma-globulin is accounted for by an increase in gamma-globulin; but there is no clear evidence why plasma-albumin should be diminished, as it often is in malarial infections. In such infections the dietary requirements of host and parasite are considerable; for 2% of red cells may be destroyed, and about 1 g. of parasite nucleoprotein synthesised, every three days.

Continued study of the relationship of host and parasite metabolism may account for the biochemical disturbance reflected in abnormal liver-function tests and, indeed, for clinical malaria.

1. Marchiafava, E., Bignami, A. New Sydenham Society Monographs, 1894; vol. 150.
2. Dudgeon, L. S., Clarke, C. *Quart. J. Med.* 1919, **12**, 372.
3. Klotz, O. *Amer. J. trop. Med.* 1929, **9**, 241.
4. Shortt, H. E., Garnham, P. C. C. *Nature, Lond.* 1948, **161**, 126.
5. Black, R. H. *Trans. R. Soc. trop. Med. Hyg.* 1954, **48**, 226.
6. Fredericks, M. G., Hoffbauer, F. W. *J. Amer. med. Ass.* 1945, **128**, 495.
7. Lippincott, S. W., Ellerbrook, L. D., Hesselbrock, W. B., Gordon, H. H., Gottlieb, L., Marble, A. *J. clin. Invest.* 1945, **24**, 616.
8. McMahon, A. E., Kelsey, J. E., Devany, D. E. *Arch. intern. Med.* 1954, **93**, 379.
9. Loomis, G. W., Heller, P., Hall, W. H., Zimmerman, H. J. *Amer. J. med. Sci.* 1954, **227**, 408.
10. Himsworth, H. P. Lectures on Liver diseases. Oxford, 1950.
11. Maegraith, B. G., Andrews, W. H., Gall, D. *Lancet*, 1947, ii, 781.
12. Andrews, H. *Trans. R. Soc. trop. Med. Hyg.* 1951, **45**, 36.
13. Brown, W. H. *J. exp. Med.* 1911, **13**, 270.
14. Moulder, J. W., Evans, E. A. *J. biol. Chem.* 1946, **164**, 145.
15. McKee, R. W., Geiman, Q. M. *Fed. Proc.* 1948, **7**, 172.

Reconstruction

GENERAL PRACTICE IN THE N.H.S.

The Cohen Committee's Report

THE first official survey of general practice within the health service was published on Tuesday in the form of a report of a committee of the Central Health Services Council.

This committee, with Sir Henry Cohen as chairman, had 23 members, including 11 general practitioners, the presidents of the three Royal Colleges in England, and 6 doctors prominent in the councils of the British Medical Association.

It covered a wide spectrum of political opinion, both medical and lay, but with a few minor exceptions its report is unanimous. In its three years of work it received nearly a hundred memoranda of evidence, ranging from a piece of notepaper to bound volumes of more than a hundred pages. Thirty-seven organisations and forty-five general practitioners submitted written evidence, and twenty-six organisations and individuals gave oral evidence.

Though the pattern set by the report does not differ widely from that advocated in a number of recent surveys —e.g., that of the B.M.A. submitted as evidence to the committee, and Dr. Stephen Taylor's Nuffield Trust report on good general practice—it draws together the numerous suggestions which have been made and crystallises them in the form of some sixty conclusions and recommendations covering all aspects of the general practitioner's work which can be dealt with by organisation or administration.

When the committee started its work, the first evidence it received was coloured by personal bias and frustration, and the aftermath of political and medicopolitical campaigning. As time went on, however, the sound and fury died down, and a number of needs and defects of the service were remedied wholly or partially as a result of the Danckwerts award and the Working Party recommendations, as well as other negotiated regulations.

The committee regards general practice, as found in this country, as fundamental to the best practice of medicine and the best interests of the patients. It cannot be replaced by a congeries of specialisms, for only general practice can ensure that the patient is treated as an individual in relation to his family background and general environment. It alone provides for continuity of treatment at all times by one doctor. Only the general practitioner can link together preventive, social, and curative medicine. It follows that the general practitioner must hold a key position in the health service, and that general practice should continue to attract the right type of doctor.

The full range of work of the general practitioner is set out by the committee in detail. It might be summed up as the provision of complete domiciliary care for all aspects of the patient's illness, as well as personal preventive medicine and health education. It is presumed that general practitioners will provide themselves with proper and adequate accommodation, and will be associated with the hospitals and local-health-authority services.

The committee finds that the coming of the N.H.S. has not harmed the relationship of doctors with their patients. There may even have been some improvement as a result of the absence of the money bar and increased coöperation among doctors.

Partnerships

On July 1, 1952, 56% of the doctors in the service were members of partnerships. During 1953, both before and after the new payment arrangements, the number of partnerships rapidly increased, and the figure is now over 60%.

The committee welcomes this growth of partnerships and also the growth of rota systems. While rota systems are to be encouraged, it is important that they should cause no inconvenience for patients, and that they should not be too large for all the doctors concerned to know each other personally.

Administration

The committee favours the retention of the present method of administering the general medical services through executive councils and local medical committees: "Five years' experience has revealed no fundamental defect. This shows that the present administrative structure is a successful evolution from the system which was used in the National Health Insurance scheme before 1948."

It is important that freedom of choice of doctors should continue, but that the arrangements for this should not encourage capricious change. The present arrangements, which require fourteen days' notice, except where there has been a change of address, appear to the committee to strike the right balance between freedom and restriction.

Method of Remuneration

The committee gives its full endorsement to the present method of remuneration by capitation fee. The possibility of merit or other special awards was carefully considered, but the committee concluded that they would be unmanageable and almost certainly inequitable when applied to general practice.

Entry into General Practice

The committee takes the view that a period of assistantship is normally the best means of introduction into general practice. Possible methods of counteracting abuses in connection with the employment of assistants were considered, and the committee recommends that in future new partnerships should be required to obtain a certificate of the Medical Practices Committee to certify that there has been no sale of goodwill. This would need new legislation; but the possession of such a certificate might be made a condition before a partnership secures loading payments on the basis of the notional division of patients between partners.

The committee holds that in a partnership of two, the partnership agreement should normally provide for at least a one-third share for the new partner at the end of two or three years (and in larger partnerships pro rata), and equal shares after not longer than seven or eight years.

The growth of partnerships is tending to reduce the already small number of vacancies in general practice advertised by executive councils. The committee suggests that the best solution here is to encourage doctors seeking assistants-with-a-view always to advertise the vacancies openly.

Ancillaries

The committee indicates that if general medical practice is to be organised effectively ancillary help is essential:

> "The doctor should not himself undertake what can be properly delegated to a non-medical assistant. The provision of such help is easier to achieve in partnerships and within groups of doctors because its costs can be shared. This is an important advantage of group practice. But the Committee concludes from the evidence that many single-handed practitioners also need effective ancillary help."

However much the municipal health workers help to staff general practitioners' surgeries and group-practice premises, the main need will still be for the secretary-receptionist (or possibly the surgery nurse) employed directly by the doctors themselves.

The committee recommends an extension of arrangements whereby home nurses help doctors at their surgeries. Where the nurses are available, there should be no objection to this in principle.

With doctors in group practice, similar links are suggested, and "it should be possible for local health authorities to associate their child-welfare and other appropriate clinics with group practices"; such clinics might be held in group-practice buildings, or the group-practice doctors might staff clinics in local-authority premises.

Midwives and health visitors should also work in full coöperation with general practitioners. Midwives should attend practitioners' antenatal clinics at their own surgeries. Practitioners should be able to make direct contact with health visitors, as they already do with home nurses and midwives.

Appointments System

The committee has had reports of practices where such systems have been successfully in use for many years. Almost always they require ancillary help so that patients may make appointments. But given such help the committee believes that:

"an appointments system may relieve the doctor of the strain which a crowded waiting-room tends to put upon him, while the patient avoids a wait, possibly of an hour or more, for his 'turn.'

"No one scheme is applicable to all practices, nor need the appointments cover in detail all patients, but each general practitioner, recognising his special needs, can, with advantage, carry out a trial in his practice."

Surgery Accommodation

Independent observers have been shocked by the low standards of accommodation and equipment provided by some doctors in some areas, particularly in industrial practices. They have remarked on the apparent apathy of the doctors and their patients. Now that private building work is becoming more possible, it is not unreasonable to press for improvements in surgery accommodation.

The gross remuneration of individual practitioners is calculated to include 38·7% for practice expenses, a large part of which relates to accommodation and equipment. An extremely low standard of accommodation costing a practitioner a great deal less than 38·7% allowance cannot be justified. "Only insistence on adequate standards can provide a proper safeguard against the otherwise paradoxical situation that the less a doctor spends on his practice expenses, the greater proportionately are his personal rewards from practice."

Local executive councils have power to inspect surgery accommodation and insist on proper provision. Up to now, executive councils have made little use of this power, mainly because they knew that doctors could not, because of building restrictions and lack of accommodation, deal with defects. But in the future, executive councils should make full use of their powers.

The committee lays down a guide to normal requirements to assist executive councils in their work:

"1. There should be running water—or at least a wash-basin with water—soap and a towel in the consulting-room.

2. There should be a separate examination-room, or a screen for the couch to be used for examinations.

3. The waiting-room should be large enough to seat in reasonable comfort all those who may need to wait (except when there is a quite unusual amount of illness about).

4. The rooms should be bright and pleasant—well-lit, well-warmed, well-cleaned and well-ventilated.

5. Furniture should be of reasonably good quality and domestic rather than institutional.

6. There should be access for the patients to a lavatory and wash-basin."

Practical architectual advice should be available for doctors who wish to carry out improvements.

Difficulties over Health Centres

The committee gives in summary form a list of existing health centres. A majority of these are former dispensaries and clinics which for convenience sake are now dealt with under section 21 of the National Health Service Act, 1946; these cannot be regarded as prototypes of the new health centres. Four health centres provided since the appointed day by local health authorities, and three provided under the ægis of the Nuffield Provincial Hospitals Trust, are mentioned.

The difficulties involved in starting a health centre are set out in detail. Many of these difficulties arise only where the transfer of established practices to health centres is involved. Practitioners are afraid that patients may fail to transfer; or that if later practitioners have to leave the centre, patients may fail to leave with them.

It is only in areas of new development that these difficulties can be avoided, provided health centres are started before doctors have begun individual practice:

"It is in new areas of development that the best opportunities will arise for experiments bringing general practitioners and local health authority services together in one building, either by the provision on a modest scale of experimental health centres, or by arrangements with doctors for the development by them of group practices. The Committee believes that the latter course may often be the more practicable and acceptable. The Committee suggests that local housing authorities might, with advantage, be encouraged to make sites or actual accommodation available to doctors who wish to establish group practices in new areas of development, on the basis that the doctors would pay an economic rent for such accommodation, and sometimes also on the assumption that the local health authority would arrange to run some of its clinics at the group-practice premises. Local housing authorities would, of course, need to avoid a position whereby they might, in effect, be taking over the selection of doctors. They could do so by ensuring—as they have already been asked to do in circular 11/50—that any application they receive should come to them through the Local Executive Council, who, in consultation with the Local Medical Committee and the Medical Practices Committee, would know what were the needs of the area and how best to deal with the question of selection."

These words contain revolutionary proposals for meeting the medical needs of all areas of new development, whether new towns or large new housing estates. If group-practice buildings are provided, in which local health authority clinics can also take place, an effective alternative local-authority centre will have been created.

The committee also points out the special needs of the industrial areas in the matter of group practice and health-centre accommodation, but makes no special recommendation, except to say that there is urgent need for improved coöperation between the doctors and the officers of the local health authorites in such places.

The committee gives its general blessing to group practice. Its definition of group practice has already been published as an answer to a special request from the Minister of Health, in connection with the Working Party's recommendations about group practice.

Prescribing

The committee rejects the idea that private patients should be allowed to receive their drugs under the N.H.S.

Domiciliary Consultations

The committee gives high praise to domiciliary consultations. The general practitioner should always aim to be present and a reciprocal effort on the part of the consultant or specialist is needed to effect this.

Domiciliary consultations should not be used as a means of "jumping the queue"; but this abuse is rare and is heavily outweighed by the great advantages obtained from the scheme.

Hospital Work

The committee recommends the development of clinical assistantships, both as a means of keeping general practitioners up to date, and also as a stepping-stone to specialisation. It also favours the part-time employment of suitably qualified and experienced general practitioners in all hospital grades.

The Obstetric List

The Committee decided by a majority that admission to the obstetric list ought not to be automatic. The criteria already recommended by the Central Health Services Council for admission to the list should be generally adopted and uniformly applied.

Coöperation

Another committee of the Central Health Services Council has recommended the setting up of coördinating committees:

"Ideally and logically there is a strong case for joint authorities. This would, however, usually require major reforms of local government boundaries, and is impracticable as an immediate solution. It is quite evident that the present structure of the Service need not prevent fruitful co-operation between the general practitioner and the other parts of the Service. Indeed, whatever may be the structure of the Service, the main need is for willing co-operation between those who take part in it. The Committee has been impressed by the weight of evidence which reveals that where there is a sincere desire to work together in a spirit of service, co-operation exists. Moreover, no administrative structure can achieve this, unless, in the thinking and feeling of individual practitioners, the will to co-operate is more powerful than the will to compete."

Public Health

Working Together

BEFORE a large audience, mainly of general practitioners, Mr. Iain Macleod, Minister of Health, on June 21 inaugurated extensions to the East Ham Chest Clinic.

Dr. L. COMYNS, chairman of the West Ham Group Hospital Management Committee, pointed out that the chest clinic was concerned not only with the treatment of diseases of the chest but equally with their prevention. In the long run the success of the National Health Service depended on the extent to which the incidence of disease was arrested or reduced. The chest clinic formed an integral part of the local health service.

Mr. MACLEOD said that areas differed from one another, and it was noticeable that in a good area the leaders of general practice were on friendly terms with the hospital and local health authority. He pleaded for a "spirit of team-work in general practice devoted to the service of the patient such as we have already in hospital." The work of the health visitor, continuing the link between the general practitioner and the hospital, might enable us to approach the ideal of the general practitioner as the head of a clinical team. Health centres, group practices, and other developments of partnership would help to solve the problems of general practice, but he emphasised particularly the importance of the practitioner having strong links both with the hospital and with the M.O.H. The National Health Service ought to be designed to promote health.

Dr. PHILIP ELLMAN, consultant physician in diseases of the chest to the North East Metropolitan Regional Hospital Board, said that the National Health Service had seen a widening of the scope of chest clinics and an upgrading of their work as vital units of a national chest service. Some 75% of their work was preventive and all diseases of the chest came within their purview. Remarkable as were the antibiotics, these must be regarded primarily as a short-term policy, and basic principles still held good. The local authority were responsible for the machinery for prevention, in the form of housing, education, contact examination, B.C.G. vaccination, nursing, home-help and almoner services, field surveys, and provision of hostels; and to do this work fully they should be less hampered by concern for the rates and should receive financial aid from the central authority. Rehabilitation schemes which were excellent on paper were apt to be less effective in practice, and the remarkable fall in mortality-rate for tuberculosis must not conceal the high figure of 350,000 cases on clinic registers Within the chest clinic the tripartite units of the N.H.S.—the hospital, the local-authority, and the general-practitioner services—were in fact coördinated, and Dr. Ellman looked forward to a comprehensive regional chest service, integrating social and clinical aspects of all chest diseases, functioning harmoniously within the framework of the general hospital.

Points of View

GOSPEL FOR GERONTOCRATS

STEPHEN TAYLOR
M.D.

A country G.P. was analysing the deaths in his practice over the past four years. In all, there had been 84, an average of 21 a year among his 2000-odd patients. The peak was between the ages of eighty and eighty-five; there had been 7 deaths over the age of ninety. He summarised his examination of the causes of death in these words:

"If you can avoid cancer and severe high blood-pressure, you have a very good chance of living to ninety. If in addition you can avoid all disease of the heart and blood-vessels, there seems no particular reason why you should die at all—*if* you are wise enough to live in our village."

Here surely is a plain case of *Back to Methuselah*.

All great writers are subject to cyclical unpopularity, and inside five years Bernard Shaw should be making a come-back. The immediate relevance of *Back to Methuselah* will at once become apparent. For here is the bright side of the penny, the antidote to the gloom which the increasing longevity of the human race seems to produce among those under sixty. The picture to which we are usually treated today is of a steadily diminishing band of under-sixties, working ever harder to maintain both themselves and a steadily growing band of retirement pensioners, of an unending vista of Darby-and-Joan Clubs, half-way houses, homes for the aged, and geriatric wards, whose senile inhabitants are are dead but won't lie down. The bright side of the penny is that the Gospel of the Brothers Barnabas is starting to be fulfilled.

* * *

It will be recalled that the brothers Barnabas, a couple of minor-prophet biologists living on Highgate Hill, anticipated that a few emotionally propelled creative evolutionists would start to live for three hundred years, without deterioration of the tissues; and that then, and only then, would the good government of mankind become practicable. To learn wisdom in the conduct of our affairs, we need not one life-time but four. The follies of youth weigh heavier than its achievement; the true wisdom of age more than balances its rigidity and conservatism.

In broad principle, the Brothers Barnabas appear to have been right. The coming of the antibiotics and their effect on modern surgery has started to make longevity the rule. In the next ten or twenty years fresh biochemical advances may have even more spectacular results. It is true that the Barnabas hypothesis of isolated peninsulas of longevity is being realised rather as a broad advance along a wide front. But the advantages which we enjoy in consequence are already showing themselves generally as well as individually.

It is a useful exercise to examine the *Times* obituaries, striking out all that has happened to each subject under the age of fifty. It will soon become apparent that we are already a gerontocracy. Both power and influence are largely in the hands of the "over-fifties."

Until we are fifty, we are proving ourselves; indeed, our chances of earning a *Times* obituary depend largely on our capacity to go on living and working well into the seventies.

* * *

Manifestly, there is a wide range of human activity where the peak of achievement is reached in youth. Most first-class athletes and aeroplane pilots are under

forty, for physical reasons alone. The surgeon, the general medical practitioner, the aggressive business-man, the tropical administrator, or the constructional engineer usually reaches his prime under fifty. But over a great range of human activity, skill increases with age until physical changes erect a barrier to its full exercise.

Good craftsmanship is a case in point. In the blowing of glass, the carving of stone, the laying of bricks, and the making of gardens, what age seems to add to quality of the finished product more than compensates for any slowness in production. It is true that the pattern of original achievement in art or architecture is firmly set by the third or fourth decade of our lives. But the full realisation of the potentialities of the pattern may be delayed for twenty, thirty, or more years. Only when arteriosclerosis blocks the channels of mental association does the decline set in.

In the Church, the law, and consulting medicine, achievement and age seem to march hand in hand. The common factor in each is experience: every permutation and combination of every situation has been witnessed or sampled not once but many times. Given a basically sound intelligence and a reasonable capacity for association, the right solution to each fresh problem will be produced with increasing facility. As Professor Mackintosh [1] reminds us, Socrates liked the conversation of elderly folk because they have been before us on the road.

In modern large-scale administration, the same obtains, though with certain exceptions. These exceptions are mainly in the creative administrative posts, where organisations—whether they are companies or corporations, trusts or universities—are being rapidly built up and expanded. If the emphasis has to be on speed and energy, rather than on a maximum number of right decisions, the thirty-to-fifty age-group is most likely to provide what is wanted. But the necessary creative energy may sometimes last long after fifty. And the administrative creators, whatever their age, may work at their best within a broad policy framework provided by the new gerontocracy.

But much modern administration depends on a mastery of formidable mass of detail and case-law. Take that fabulous fellow, the late Sir Filberry Nutt:

> Nutt was a Civil Servant of remarkable intellectual capacity. To the end of his life, he could master intellectually any new subject as swiftly as he could read the relevant documents. On this basis, his power to provide solutions had always been first-class. But his emotional development was much slower. Only in his fifties did he grasp the importance of the emotional factors in many administrative situations. It then took him five years to pluck up the courage to reorientate his decisions to allow for these imponderables. He had now reached the emotional stage of the intuitively successful business-man, but behind this was ranged an intellect of academic formidability. Viewing Nutt at the age of fifty-eight, it had become apparent to both the members and the officers of the European Power Commission that in him they had a secretary of outstanding capacity, who was likely in the next twelve years to transform the entire power situation of North Western Europe. But at fifty-nine an epileptic taxi-driver cut short his life, at a time when his value to society was reaching a maximum.

In large and complex organisations, policy decisions will be wise only if they embrace both the broad sweep and perspective and the mass of relevant detail. Indeed, the broad sweep can emerge only from a detailed factual analysis. And the mastery of detail is only possible if we are given time to master it.

* * *

In politics, and in British politics in particular, a measure of gerontocracy has been established for close on a hundred years. The physical basis for this is to be found in the astoundingly arduous conditions which politicians are expected to endure both inside and outside the House of Commons. Only the toughest can survive. The banging slanging side of politics, the glib and fluent rhetoric, and the demagogy are easy enough in one's twenties, thirties, and forties. But they are aspects of political childishness, embarrassing and even pathetic when they persist into the fifties and sixties. By then the elements of the art of politics should have, been learnt. Here most of the superlative craftsmen are in their sixties, often their late sixties or early seventies.

It is part of the art of politics to know not only when to act but also when to take no action. Sometimes action must be swift and ruthless. Sometimes calculated procrastination is the secret of success. At these high levels, often the right thing is the dull thing. To the outsider, the doughy platitude may seem no more than —a doughy platitude. Yet it is in fact nicely calculated to mop up an explosive quantum of emotion, which, left to blow off on its own, would be capable of much harm.

It may be objected that gerontocracy tends to negate the creative or artistic side of politics. Yet experience does not bear this out. If we take three great pieces of political imagination, the liberation of India, the creation of the National Health Service, and the inception of the New Towns, all the principal performers were in their fifties or sixties. Similarly, great age is no handicap in imaginative conduct of a war or a peaceful foreign policy. Of course, the politician who is stodgy in youth will remain stodgy in age; indeed the stodginess is likely to increase. But the excessive ebullience of youth will often mature into just the right degree of adventurous vigour in the active maturity of seventy.

Looking back on the man-made disasters of history, their principal political architects were usually under fifty. If Hitler had had to survive thirty years of back-bench or front-bench opposition life before coming to power at sixty-three, it is arguable that he would have had much of the intolerant psychopathy knocked out of him. It is arguable, too, that the avoidance of a third world war will depend almost entirely on the capacity of Russian politicians to survive their own purges. After thirty years of bickering at UNO, it will have become the habit of a lifetime. Political enemies will be the oldest of friends. Not to have them to abuse would be a major emotional disaster.

* * *

But it is easily possible to have too much of a good thing. Not all our gerontocrats may be good. We can all think of those in high places for whose departure we have earnestly prayed. "While there's death, there's hope." It is well if such people can be firmly diverted from the stream of automatic promotion. If they want to work on in their familiar spheres, they must be prepared to move down to levels where they can do no harm. There is no danger here of side-tracking true merit; at this stage it will be generally apparent. If errors do occur and good men get squeezed out, then they will usually find no difficulty in demonstrating their capacity in alternative fields of activity.

One has always believed that the best hope for mankind lay in more science rather than less. In recent years, this naïve belief has been somewhat severely buffeted. But it has survived, and now it is justifying itself. Virtue is a slowly growing plant. Most juvenile saints were psychopathic hysterics. To be truly good, one has got to have known evil and survived. And this takes time. For the exercise of the greatest virtue, one needs the capacity to keep on keeping on to the end of the road. By pushing back that end, we increase the sum total of virtue in geometric progression.

1. *Lancet*, 1954, i, 991.

In England Now

A Running Commentary by Peripatetic Correspondents

LAST week I went up on to the fells to try a helicopter for mountain rescues. As soon as we had laid out a man on the hillside, a police patrol car in the valley beneath sent out a radio message for help to the airfield 13 miles away, and within ten minutes the helicopter was hovering overhead. Out came a Neil-Robertson stretcher. Down came the doctor on a wire cable to give first-aid. The aircraft swung away to spare us the blast of the slipstream, and circled slowly round while we turned our patient gently over and strapped him into the stretcher. A wave to the pilot brought the helicopter overhead to lower the cable again. We hooked on the stretcher and eased it off the ground as the winch took up the slack; our casualty was drawn up into the aircraft and away they all flew to hospital, six minutes after its arrival on the scene.

As we climbed down to the valley I thought of all those weary stumbling treks, with an injured patient strapped in a joggling stretcher, taking one hour, two hours, maybe three hours of misery from the high crags down to the Land Rover; the bumpy couple of miles along the stony track to the waiting ambulance. Every accidental stumble, every unavoidable jolt inexorably adding up on the debit side of the vital account; a total far more lethal than the sudden shock of initial trauma. Helicopters may be noisy in central London, but they have their uses on the fells.

* * *

First we missed the chocolates ("Your wife was so understanding on the phone, Doctor"). Then came the sudden absence of those packets of tea ("so's you can have an extra cup when you have to go out at night, Doctor"). Last winter we heard the last of "I'm sure you wouldn't mind taking home a few eggs for the children, Doctor." In May butter came off the ration. At four shillings a pound that's quite a sum over a year. Now I have probably had my last chop ("When you work so hard you need a good meat meal, Doctor.") Thank goodness our pet diabetic's lupins are doing well this year. At least we can feast our eyes on his contribution whilst we add some methyl cellulose to our diet.

* * *

Everyone knows so much nowadays that the hard-working authors of even the lightest fiction have to verify the heaviest facts. As a result gross medical mistakes are disappointingly rare in modern novels. But I did find an old friend in an American whodunnit the other day—the jugular artery. I first met the artery in a best-seller of 1908. Curious the fascination this word "jugular" has for authors: a strong word with its hint of gurgling noises and garotting. Calculi are occasionally met in fiction, and not so long ago biliary stones provided valuable evidence in a famous murder trial; but the superlaryngologist, who, in a recent novel, successfully removed a pancreatic stone from the windpipe, perhaps pushed things too far.

* * *

> "Persistent brow presentation increases the risk of both Mother and child: maternal mortality is 5%; fœtal mortality is 25%. With a normal size pelvis and fœtus delivery of persistent brow is impossible."

A patient was sent with a persistent brow presentation to the local hospital maternity unit for expert obstetric attention under anæsthesia. The super de-luxe ambulance rose to the occasion in more ways than one. Halfway to hospital it skidded on the wet road, slewed across the grass verge, hurtled tail first through a hedge, and came to rest in a ploughed field, flinging the patient plus attendant midwife with a gay abandon into the arms of Mother Earth. The journey was completed in a passing furniture van, and a few minutes after arrival at the maternity unit a lusty infant was born spontaneously to a somewhat shaken mother in the presence of a much surprised medical staff. Mother, midwife, and baby are doing well.

I understand that the furniture-removers are now quoting for maternity cases, as part of their "safe delivery service."

* * *

They lived seven miles away. They were rich, kindly, and excellent hosts, and I had dined with them often. The old man and I had played many rounds of golf together. About 1.30 A.M. on a filthy night of howling wind and sleety snow he rang me up. The "Old Trout" had a bellyache—would I come? I went. The bellyache was hot lobster pilaff—she loved it in liberal helpings. I reassured her that no disaster was impending. Later, over a large whisky and soda, I said to my patient's distinguished husband:

"Freddie, with your three large cars and a chauffeur at hand, don't you think you might have fetched me?"

"Old boy," said Freddie, "I wouldn't put a dog out on a night like this."

* * *

SAM, THE SURGICAL DRESSER

The Surgeon scrubbed long at the washbowl
(For he by the session were paid)
Then spoke very humble to Sister,
Of whom every man were afraid
—All excepting one dresser, his Chief's right-hand man,
A lad by the name of Sam Small;
And he and the Sister were both daggers drawn,
They thowt nowt of each other at all.
Now as Sister leans over a needle to grab
She happens to brush against Sam,
It knocks the retractor clean out of his hand
Which falls to the ground with a slam.

"Pick it oop" says Sister, abrupt-like but cool,
But Sam with a shake of his head,
Says "Seeing as tha' knocked it out of me hand,
P'raps tha'll pick the thing oop instead."

The Staff-nurse goes off and says she'll come back
When squabbling had come to decision.
The Sister takes mask off and lights up a fag.
The Chief weeps into his incision.
"Sam, Sam," says Chief coaxingly,
"Come on lad now be good and chuck it."
But Sam says, "She knocked it doon, and she picks it oop,"
Or it stays where it is—next to bucket."

At the sound of high words the Anæsthetist woke,
And sought for the cause of the trouble,
For all other students and nurses and pros.,
Were full of excitement and bubble.
"Come stop all this nonsense and do what tha's told"
The Anæsthetist says with a roar.
But Sam says, "She knocked it doon and she picks it oop,
Or it stays where it is—on t' floor."

The H.M.C. Chairman in boardroom above
Were waiting for members to meet.
He stumps down the stairs at the sound of these words
To deal with the shouting and heat.
"Dresser Small pick that oop" the Chairman directs,
A man for strictness renowned,
But Sam says "She knocks it doon, so she picks it oop,
Or it stays where t'is—on t' ground."

Now little Nurse Ramsbottam were just passing through
When these stubborn words she did hear,
She trips right across and speaks a few words
Into Sam's external ear.
"Sam, Sam," she says very soft,
"Come on lad now just to please me,
Sam, Sam, come pick it oop now—
Or I'll no come to pictures with thee."
And Sam goes deep red—he dare not resist,
And feeling round underneath table,
He picks up retractors from where they had fell,
And retracts as best he is able.

So the op. soon were done,
And the Chief were that pleased,
As the cheering and clapping rose high,
He goes to the sluice and he picks out for Sam
A gallstone to wear in his tie.

Letters to the Editor

DIET AND CORONARY DISEASE

SIR,—Professor Duguid's article in your issue of May 1, and his reply (June 5) to the letters of Dr. Leitner and Mr. Daw in the issue of May 22, indicate a fundamental misconception of the theory that the diet has an important influence on the development of coronary heart-disease.

Many points in Professor Duguid's article are not clear to me, including the relevance of the title to the main burden of text and information provided under it. No-one would argue that mural thrombus formation may not occur in coronary heart-disease or in the preceding stage of developing atherosclerosis. Does Professor Duguid mean that mural thrombi are, in fact, the necessary initiating factor in atherosclerosis? Or is he merely suggesting that, occasionally, thrombus formation *may* precede cholesterol deposition in the intima? We can ask *why* a mural thrombus is formed and, moreover, why at one place and not at another. Would not prior deposition of cholesterol in the wall of the artery, with the attendant interference with the nutrition of the adjacent cells, create a condition favourable for thrombus formation?

But all of this is really beside the point. No-one pretends to know the exact sequence of events and the mechanisms involved in atherogenesis. This is lamentable, but it need not hinder the recognition of some significant relationships. Obviously, the concentration of cholesterol in the blood-plasma is not the only factor involved, but few indeed will deny that it does bear a relationship, with high statistical significance, to the incidence and mortality of coronary heart-disease in man. The blood analysis may be made in terms of beta-lipoprotein concentration or lipoproteins of particular size and density, but the result is much the same, and cholesterol, as such or in complexes, is clearly central to the question, both in the blood and in the wall of the artery. In regard to the theory that the diet plays a rôle, it matters little whether a high blood-cholesterol level favours direct deposition in the intima or induces thrombus formation which, in turn, is followed by secondary deposition.

Professor Duguid may prefer to believe that the idea that atherosclerosis is connected with diet arose out of an impression that fatty changes in arteries were prevalent in (among others) "fat people who had presumably lived well," though I do not read the history in that way, but his dismissal of this point is curious. Do people who "live well," whatever that means, actually show an undue or premature incidence of atherosclerosis and/or "fatty changes in arteries?" If so, does this mean that the diet has no effect? Would Professor Duguid suggest they "live well" as a *result* of the developing atherosclerosis?

There seems to be confusion here between causes and influences. Atherosclerosis is not an all-or-none proposition like an infectious disease or pregnancy, and the search for a single, ultimate cause may be fruitless. There are all degrees and, as Professor Duguid remarks, few adults in England and the United States maintain their arteries free of the taint. But more or less atherosclerosis makes all the difference between relative health and fatal coronary heart-disease. Rather than devoting all attention to speculating about the precise and complete details of an immensely complicated mechanism, it may be in order to inquire about what influences the speed and degree of the process.

The diet theory does not seek to explain much about the mechanisms in atherogenesis. In its simplest form as I phrase it, the theory merely says that if you subsist on a high-fat diet you are more likely to have coronary heart-disease at an early age than if you live on a low-fat diet, and that this effect is mediated, at least in part, by the effect of the diet on the concentration of cholesterol and cholesterol-bearing lipoproteins in the blood.[1] It could be remarked that most of the notable successes of mankind in controlling other diseases have proceeded from no more complete information than this.

There are several important questions about the diet theory but they have been missed by Professor Duguid. He is flogging a dead horse when he scoffs at the idea that dietary cholesterol is the controlling factor in man. Those of us who have actually measured diets and carried out prolonged dietary experiments on man can testify that dietary cholesterol is relatively unimportant in human diets but that the total fat content of the diet, or the total load of metabolising fat, is of real consequence.

To shift the argument to "national prosperity" merely dodges the issue unless dietary fat is taken as the measure of prosperity. I presume England is more "prosperous" than Italy, then, and that explains why there is so much more coronary disease in London, for example, than in Naples. Incidentally, obesity seems to be more common in Italy than in England. Professor Duguid may suggest that Italian physicians cannot recognise coronary disease, but he should know that we cannot agree with this after a patient-by-patient survey of the medical wards. And let him ponder the fact that for men at the age when coronary disease is the major threat in England and the United States, the death-rate from the sum of *all* causes of death is lower in Italy than in his and my countries and that this over-all advantage is nicely explained by the reported differences in coronary heart-disease.

The test of any scientific theory is whether it fits all the known facts and allows verifiable predictions to be made. So far, the theory that a high-fat diet tends to elevate the blood-cholesterol level, and that this in turn promotes atherosclerosis in man, stands up under this test. The theory is in harmony with all the animal experiments which show that whenever, and however, the blood-cholesterol is raised and kept at a high level, atherosclerosis tends to develop. The theory makes sense out of the otherwise mystifying changes observed during the war years in the degree of atherosclerosis seen at autopsy in Finland and in the behaviour of the mortality from coronary heart-disease in Finland, Sweden, Norway, Denmark, England, and the United States. The theory would predict the low concentration of cholesterol in the blood we found in Naples and Madrid and the higher concentration we found in England and among the wealthy men on high-fat diets in Spain.[2] On the basis of knowledge that the native Bantu gets only some 10% of his calories from fats, I should predict very low blood-cholesterol values and very little atherosclerosis among the Bantu people, and this prediction is amply confirmed recently.[3] Further, the theory predicted that if we should seek out men on relatively high-fat diets in Italy, we would find them to have relatively high concentrations of cholesterol in the blood—and this is precisely what we found in Italy during the past few months. Nor was it surprising to obtain evidence that coronary heart-disease is far more common among these men than in their compatriots who subsist on low-fat diets.

But it is necessary to scrutinise the theory under all possible conditions, and to clothe it in more detailed form. Pathologists, as well as physiologists and epidemiologists,

1. *Circulation*, 1952, **5**, 115; *Voeding*, 1952, **13**, 539; *J. Mt Sinai Hosp.* 1953, **20**, 118; *Amer. J. publ. Hlth*, 1953, **43**, 1399.
2. *Lancet*, 1952, ii, 209; *Arch. intern. Med.* 1954, **93**, 328; *Metabolism*, 1954, **3**, 195; *Brit. J. Nutr.* 1954, **8**, 138.
3. Walker, A. R. P., Arvidson, U. B. Studies on blood cholesterol in the Bantu. To be published. Higginson, J., Pepler, W. J. Coronary Atherosclerosis among the Bantu. To be published.

are needed to help sort out the variables, but it is essential we agree about what we are talking. Professor Duguid is more ambitious than I when he seeks to know the full and precise sequence of events in the tissues in every case. At present, I am merely asking about interrelationships and factors in the mode of life that influence the outcome.

Laboratory of Physiological Hygiene, University of Minnesota. ANCEL KEYS.

THE POSITION OF NEUROLOGY

SIR,—Sir Russell Brain in his letter on this subject (June 19) has raised other issues of importance to the proper development of the hospital service. He suggests that what is needed is a "comprehensive and representative medical committee" at regional board level. It is unlikely that he means that such a committee should supersede the medical staff committees at hospital level; but that is what I fear would happen on anything but minor issues, such is the insidious influence of power. Members of such a body would advise on matters affecting hospitals in which they had not worked, and of whose problems they would have dangerously little knowledge. One can imagine the irritation in the teaching hospitals if a similar scheme were ever applied to them by the University Grants Committee or the Ministry of Health. Regional hospital boards for reasons of geography, quite apart from pressure of work, are not sufficiently in touch with local conditions to bring balance or wisdom to many of the schemes they institute. Overworked officials at a distance, dealing with dozens of hospitals but with allegiance to none, are poor substitutes for local men who have to live with the fruits of their labours.

The present dichotomy of control between hospital management committees and regional hospital boards often results in confusion and frustration which is not the fault of either, but of the system which denies the right of elementary housekeeping to the one and of complete executive power to the other. A block grant system for management committees and a breaking down of the rigid barriers between maintenance and capital expenditure would go a long way towards restoring the sense of responsibility which existed in the best voluntary hospitals before 1948. In such an event big decisions on policy would again be taken locally, and medical staff committees would function more usefully than they do now. The rôle of regional boards in my opinion should be limited to the essential one of liaison and coördination and to the organisation of appointment committees. Such a scheme would release many of the very able officers and laymen at present struggling with distance and paper at regional level to strengthen the management committees and local hospitals from which so many of them came in 1948.

The very important matter of the development of neurological services, which I strongly support and have urged locally, is a good example of a problem that cannot be considered in a vacuum. The needs of other specialties are very great. How inadequate are the existing services? Can the department of radiology accommodate the extra work of neuroradiology? Are there the beds and the nurses? Is there theatre and ward space for the neurosurgeon who must surely be lurking in the bushes? These and many other questions must be asked and answered by clinicians with local knowledge in the medical staff committees of the hospitals concerned, and not, I hope, at regional board level. Only if there were disagreement between the major hospitals of an area after full discussion on the most efficient and economical siting of a neurological unit might the coördinating function of the regional board play a useful part.

Ipswich. J. W. PAULLEY.

PANCREATITIS

SIR,—In your account of his Moynihan lecture[1] Dr. Walter C. MacKenzie is reported as describing a case of acute pancreatitis following embolisation of the cœliac artery. Dr. MacKenzie stated that in some cases of pancreatitis evidence of intravascular fat could be found, and he suggested that this fat might derive from the liver.

As pathologist to the Royal Alexandra Hospital at Edmonton in 1952–53, I performed the necropsy examination on the patient mentioned by Dr. MacKenzie (a woman, aged 59; A102/53) and also on the other patient treated for acute hæmorrhagic pancreatitis in that hospital during my stay there (a man, aged 35; A74/53). Then, as now, I regarded the occurrence of acute hæmorrhagic pancreatitis as a result of embolism as something which might happen occasionally but not as sufficient cause for theoretical speculation. On the other hand, in these two cases I was deeply impressed by the pathological picture of severe damage to the renal tubules; and finding a similar severe acute nephrosis in two subsequent cases here in Sudbury I was led to further investigations. In search of confirmation of my findings I asked for samples of fixed material from my two cases in Edmonton, but this was unfortunately not forthcoming. However, the findings in my two cases here appear to be conclusive enough in themselves.

In these two cases frozen sections stained with Sudan IV showed widespread and heavy fat embolisation in kidneys, lungs, and heart, and particularly heavy intravascular fat pools in and about the pancreas. My studies (to be reported at length elsewhere) further showed direct entry of this fat into the vasculature from the disrupted interlobular and peripancreatic fat. This, Sir, appears to be a far more likely course of events than the derivation of fat emboli from liver fat as postulated by Dr. MacKenzie. Further the experimental demonstration that pancreatitis may be produced by intra-arterial injection of fat emulsions after ligation of the pancreatic duct proves nothing more than that pancreatitis may be produced by any form of embolism.

Sudbury, Ontario, Canada. MATTHEW J. G. LYNCH.

MENTAL CARE

SIR,—The recent articles and letters suggest that psychiatric preventive care and reablement can best be carried out in the home and the workshop. They stress the rôle of the psychiatric staff, leaving out the contribution of other patients and, more important, of the community as a whole. To be effective a mental health service, like a child guidance, must be carried out with the coöperation not only of the patient's family, but also of social agencies in the community.

That this is possible has been shown during the last 7 years, during which 1500 patients, aged three weeks to ninety years, have been seen at our clinic. We have four psychiatrists doing (part-time) a total of 13 sessions per week. We see over 200 new patients annually, as well as domiciliary and general-hospital referrals. Our patients receive an average of 10 psychotherapeutic interviews and are followed up indefinitely. We use two beds in the general hospital, and otherwise for our inpatient care have to thank Dr. Ling at Roffey Park, Dr. Maxwell Jones at Sutton, Dr. Cook at Bexley, and other medical superintendents, depending on the severity (and geography!) of the case.

A case-load of this size has necessitated social therapy. On a limited scale we have organised groups for adults and children; our play-reading group has been in existence for 4 years. Outpatient reablement has also been carried out by mixing with physically ill patients

1. *Lancet*, 1954, i, 1126.

in our occupational therapy department. Severely ill patients could not be seen often enough in a small clinic nor could two psychiatric social workers pay enough visits. The help of health visitors, voluntary agencies, and a team of voluntary visitors has therefore been enlisted. In running groups volunteer help has always exceeded accommodation.

Our aim has been to place our lonely, isolated patients within a social group already in existence in the community, rather than to create an artificial group of mentally sick persons. Social groups already existed for children and for men, but women were not so easily dealt with. At our instigation some years ago the first Townswomen's Guild in Bromley was started, and there are now five guilds doing excellent preventive work.

Our work has reached a nodal point and local people have stepped forward to help deal with our lack of facilities. Last week 70 local people formed a committee to set up an efficient social reablement service. The psychiatrists and psychiatric social workers will continue their individual work; the social work will be carried out by an organisation instead of by purely individual effort.

Department of Psychiatry,
Bromley Hospital,
Bromley, Kent.

ELIZABETH TYLDEN.

INFECTION WITH DRUG-RESISTANT TUBERCLE BACILLI

SIR,—In their instructive article last week Dr. Thomas and his colleagues rightly emphasise the impropriety of giving one antituberculous drug alone, and also indicate the possibility of superinfection with a resistant strain of bacillus.

Another lesson is also to be learnt from their experiences which has a practical application at the present time—namely, that patients who have already received quantities of one drug alone (usually P.A.S.) in the past should not be given this again as sole cover against the emergence of a resistant strain with any other single drug until it has been established that their organism is still sensitive to the first drug. This is well known to phthisiologists but perhaps can still with advantage be emphasised.

Colindale Hospital,
London, N.W.9.

DIANA OWEN.

ARTHROPLASTY *v.* ARTHRODESIS

SIR,—In his letter in your issue of June 12 Sir Reginald Watson-Jones states that arthrodesis of the hip is a procedure that should carry an assurance of success, and in order to achieve this he advocates four months' immobilisation in a full plaster hip spica following the operation.

Although I have always had a special interest in arthroplasty of the hip, I strongly support his championship of arthrodesis as being still the method of choice for most uncomplicated cases of painful unilateral arthritis of the hip. I feel, however, that if it always entailed subjecting the patient to the ordeal of four months in a plaster hip spica, one of the chief merits of the procedure would be lost—namely, that it does not submit the patient to severe and prolonged after-treatment. Moreover, as in a proportion of cases there may also be some arthritic changes in the knee-joint, I find it difficult to believe that such a régime is devoid of the risk of subsequent stiffness even under the best conditions.

The technique which I have employed for nearly twenty years without material alteration consists of an intra-articular arthrodesis using a Smith-Petersen nail and supplementing this with an iliac graft inserted into the upper part of the neck of the femur and the adjoining roof of the acetabulum. Apart from the nail no other form of immobilisation is used, though a short hip spica is usually applied a fortnight later and retained for eight weeks. This does not immobilise the hip, but protects it from any excessive strain to which it might otherwise be subjected.

The results have recently been reviewed by Austin Brown.[1] There was bony union in 87%, while all the remainder had a sound fibrous ankylosis with little or no pain except in one case.

Many of these operations were performed by trainees, and most of the failures could be traced to some fault in technique. I feel therefore that to subject every patient to the severe ordeal of four months in plaster, with its attendant risks, in the hope of compensating, if possible, for technical faults in a small percentage, is unfair to the great majority of the patients, and to the method itself as this must limit its indications and therefore its usefulness.

Guy's Hospital, London, S.E.1. T. T. STAMM.

INJECTION OF LACTIC ACID INTO THE OSTEO-ARTHRITIC HIP

SIR,—The accompanying table analyses a follow-up in 1953–54 of patients who, apart from occasional maintenance doses, had completed treatment by lactic-acid injection by June, 1952, and of whom 20 had subsequently undergone arthroplasty before January, 1953. So far as injection goes, all were treated by me personally; 93 patients were communicated with, of whom 76 replied. One question only was asked: "Are you satisfied with the effect of treatment?"

I divide osteo-arthritis of the hip into three categories, based on radiographic appearances and subjective symptoms (pain and degree of functional disability); the clinical findings appeared to me to correspond with the radiographs.

Lactic acid without procaine was used in 41 patients, as sensitivity reactions had occurred: an average amount of 12 ml. was injected, usually every fortnight. I believe the technique of injection to be of some importance. I use a syringe of the type with which 'Lipiodol' is injected; this has a screw-down piston, which enables needles of a fine calibre to be employed, and the injection to be given under considerably greater pressure than is possible with the ordinary syringe. This is important. The joint capsule, the chief source of pain, is usually adherent to the femoral neck, and injection under pressure releases these adhesions. I have demonstrated this radiographically, using diodone, and it is further borne out by the ease with which the capsule can be opened at subsequent operation.

The number of patients is too small for any firm conclusion. My impression is, however, that in group A this method of treatment is fairly successful, and that

1. *Guy's Hosp. Rep.* 1954, **103**, 13.

PATIENTS' OPINIONS AFTER TREATMENT

Group	No. of cases	Lactic-acid injections			No. of cases	Arthroplasty after lactic-acid injections		
		Satisfied	Doubtful	Dissatisfied		Satisfied	Doubtful	Dissatisfied
A	15	10	2	3	3	1	0	2
B	28	16	3	9	9	3	4	2
C	33	21	4	8	8	2	0	6
Total	76	47	9	20	20	6	4	10

Group A: Minor loss of joint space, usually in upper outer quadrant. Chief complaint is of pain and slight limitation of abduction.

Group B: Cyst formation, osteophytic outgrowth, much loss of joint space. Pain severe with frequent night pain; all movements restricted by 50%.

Group C: Gross deformity of head and acetabulum, usually shortening of femoral neck. Pain variable, chiefly on movement; movements restricted by 75%.

operative measures are rarely called for; that in group B arthroplasty is likely to give more satisfaction to the patient; and that in group C the likelihood of failure following arthroplasty is very considerable, possibly by reason of progressive pathological change in the acetabulum.

Sunderland. W. GRANT WAUGH.

POTENTIATION OF CORTISONE BY GLYCYRRHETINIC ACID

SIR,—The clinical trials in which an attempt was made to potentiate the effect of cortisone by glycyrrhetinic acid, as described by Dr. Dudley Hart and Dr. Leonard (April 17), lack rationale. Earlier workers have described the action of liquorice as imitating deoxycortone—a mineralocortoid which is distinguished by its strong Na-, Cl-, and water-retaining effect and by absence of the carbohydrate-regulating effect of cortisone.

In 1950 Molhuysen et al.[1] reported that one of their patients—the only one with rheumatoid arthritis—showed no improvement after liquorice. Also Card et al.[2] described liquorice as deoxycortone-mimetic; but in contrast to deoxycortone it does not prolong the survival of adrenalectomised rats. Deoxycortone itself, on the other hand, has been used by Selye to produce experimental arthritis.

It was therefore not to be expected that glycyrrhetinic acid would be of value in the treatment of rheumatoid arthritis.

Tel-Aviv, Israel. J. LEVY-ZAKS.

CLINICAL TESTS FOR KETONURIA

SIR,—I have hesitated to enter this correspondence; but since, in your last issue, Dr. Adams makes the plea that Dr. Nash and his colleagues (April 17) should have given the composition of the tablets they used, I feel that I should draw attention to a letter from G. H. Darling and myself which appeared in your issue of Oct. 16, 1948.

In this, a simple powder Rothera's test is described, and the composition of the powder is as follows:

Sodium nitroprusside	0·5%
Anhydrous tribasic sodium phosphate	12·5%
Ammonium sulphate	87·0%

For further details the original letter should be consulted.

I have since had considerable experience with this particular powder, and have in fact had it made up into tablets. I can only say that I have found the test to be of very considerable value. It is so simple that the dullest patient can carry it out, and it acts as a good forewarning of serious diabetic ketosis.

When compared with a commercial brand of tablets for ketone testing (probably the ones used by Dr. Nash and his colleagues) I have found that, whereas both are satisfactory, I prefer the formulation given above, since there appears to be a much greater difference in depth of colour between just detectable and clinically serious amounts of ketone bodies. It is, therefore, easier for unskilled patients to interpret.

Both aceto-acetic acid and acetone give a colour reaction but they are of slightly different hue, that resulting from aceto-acetic acid being slightly bluer and less purple than the one produced by acetone. This is of no practical importance, the colour produced by urine containing ketone bodies being the same as that obtained in the orthodox Rothera's test.

Department of Medicine,
University of Durham. G. A. SMART.

1. Molhuysen, J. A., Gerbrandy, J., de Vries, L. A., de Jong, J. C., Lenstra, J. B., Turner, R. P., Borst, J. G. G. *Lancet*, 1950, ii, 381.
2. Card, W. I., Mitchell, W., Strong, J. A., Taylor, N. R. W., Tompsett, S. L., Wilson, J. M. G. *Ibid*, 1953, i, 663.

THE SYNERGIC ACTION OF MUSCLES

SIR,—For effective movement to be produced at any joint it is well known that joints proximal to the site of action of the prime movers and antagonists must be fixed so as to afford a stable base for the moving part and for action against resistance. At the same time tensions in more distant muscles must usually develop so that the equilibrium of the body as a whole is not disturbed. Wood Jones[1] gives examples of muscles acting as synergists and fixators which may be taken to illustrate how little essential difference there is between these modes of action. The spreading of the thumb by the abductor and extensor pollicis longus muscles calls forth the "synergic" contraction of the flexor and extensor carpi ulnaris muscles to combat the tendency to coincident radial movement of the wrist; abduction of the little finger calls forth the "fixation" action of the flexor carpi ulnaris muscle on the pisiform bone from which the abductor minimi digiti arises, while in the same movement the radial flexors and extensors of the wrist contract "synergically" to prevent ulnar deviation of the wrist. Lockhart[2] writes that "synergists might well be classed as special examples of fixation muscles." Beevor,[3] in his classical lectures on muscular movements, divided fixing-muscles into "those which always take part in the strong movements irrespective of the posture of the person, which we may call *essential*, and those which depend on the position of the person and where his fixed point or base is, which we may call *postural*." As an example of essential fixation we may take the contraction of the extensors of the wrist when the hand is clenched, and as an example of postural fixation the contraction of the erector spinæ when the contralateral upper limb is advanced or abducted. Taken as a whole, the immediate widespread supportive response to the initiation of action in prime movers and their antagonists is the process of muscle synergism.

While muscles are acting as prime movers their length and tension are independently variable over a wide range, whereas while they are acting as antagonists their length is variable but their tension is constant and at a minimum. That at least is what we suppose. An alternative explanation is that, as prime movers contract, the antagonists not only "pay out the slack" just so much as is from moment to moment required, but actively resist too precipitate an action of the prime movers, thus acting in some manner as regulators of the latter (Wood Jones). I do not believe that clinical study of muscles in action supports this alternative view. It is a different matter in the so-called "action of paradox" when, during a movement, a point is reached at which gravity suddenly assists instead of opposes the movement, and the erstwhile antagonists promptly take over the function of prime movers in a process of *active* lengthening in contrast to their former *adaptive* lengthening.

The essential feature of the synergic component of movement and posture is the setting up of variable tensions in widely separated groups of muscles, without those muscles undergoing any change in length (isometric contraction); and this constancy or invariance of length of all synergic muscles is maintained under conditions of varying load or strain upon them, as the prime movers act against gravity and variable mechanical opposition.

I want here to suggest a manner whereby for any given movement the immediate innervation, in appropriate intensity, of all synergic muscles (both "essential" and "postural") could be produced without the intervention of those "higher level" motor centres which are

1. Jones, F. W. Principles of Anatomy as Seen in the Hand. London, 1949; p. 216.
2. Lockhart, R. D. *In* Cunningham's Text-Book of Anatomy. Oxford, 1943; p. 389.
3. Beevor, C. Croonian Lectures on Muscular Movements. London, 1903; p. 55.

essential to the movement itself, and which therefore indirectly control muscles acting in groups as prime movers and antagonists.

The problem of how to maintain invariance of some function of a system in the face of conditions of stress tending to change the function, is solved by the electronic engineer by using a controlling circuit called a servo-system. In such a system some sensory device detects deviation from the inbuilt performance-requirements, and a regulating current is automatically generated in proportion to the deviation. This current influences in a negative sense (by "negative feed-back") the action of the effector or motor side of the system so that the tendency to deviate from correct performance is checked. Such control servosystems are said to be "error-actuated." [4]

An example of this type of servosystem is the automatic regulator or stabiliser which can be used in orientating a piece of equipment in a ship or aircraft so that it is unaffected by the roll, pitch, or yaw of the craft. Any departure in the orientation of the equipment with respect to a fixed direction set by the axis of a free gyroscope is automatically measured, and a correcting signal is applied through an amplifier and servomotor to remove the error.[4] Another example would be a motor which is maintained at constant speed by servocontrol despite a varying load imposed upon it.

The constant length of muscles acting as synergists could well be maintained by neural servosystems of the type discussed, "monitored" by the muscles' own stretch-receptors. The muscle stretch-receptors are the sensory devices which detect deviations from the constant length necessary for proper synergic action, and produce the feed-back which through neural circuits regulates muscle contractility and muscle tension. The muscles, through their own stretch-receptors, possess what the servocontrol engineer calls "inherent feed-back."

On this hypothesis any given muscle is constantly under the influence of a neural closed-sequence servo-system that maintains invariance of its length until it is activated to produce bodily movement. When it is thus activated the invariance servocontrol of the muscle is unlocked, and it acts as a prime mover or antagonist. This hypothesis assumes as an operative biological principle (or, speaking mechanistically, as an inbuilt pattern of correct performance) that all muscles maintain a constant length unless they are acting as prime movers or antagonists. If this is so, the appropriate distribution of tension in the near and remote fixators would automatically follow, and synergism would be complete.

Selly Oak Hospital,
Birmingham, 29. I. A. GUEST.

DAMAGES AND REFUSAL OF TREATMENT

SIR,—Dr. Morgan and Dr. Tylden comment (June 5) on a patient's refusal to enter hospital and the consequent judgment at the Court of Appeal. They ask: "Was the suggested treatment reasonable, and did it offer the patient the best chance of recovery?"

As the consultant who gave evidence in the original proceedings at the Liverpool Assizes from which the appeal arose, I feel that the writers of the letter have drawn their conclusions on this matter without sufficient acquaintance with the facts of the case. Since the patient's identity is known, one can obviously not give any detailed account of his clinical condition, but the following points are of importance.

When this patient was seen repeatedly at my psychiatric outpatient clinic at a general hospital, it became clear that, on account of his personality and domestic environment, treatment would best be carried out at Rainhill Hospital. This hospital has a separate open-door rehabilitation unit, for both sexes, where the régime has been specially planned for such patients.

Because the patient had become increasingly depressed, it was recommended that he should have two or three applications of electrical shock treatment, in order to remove this symptom and to clear the way for psychotherapy—a procedure which experience in this hospital shows to be successful in practice as well as in theory.

Perhaps I should add that at the Liverpool Assizes I gave evidence to the effect that electrical shock therapy would merely be an adjuvant to treatment and that psychotherapy and rehabilitation was the main aim.

I do not feel myself competent to argue as to the legal implications of the case.

Rainhill Hospital,
near Liverpool. I. R. NUSSBAUM.

EFFECT OF POTASSIUM IODATE ON ENDEMIC GOITRE AND PROTEIN-BOUND IODINE LEVELS IN SCHOOL-CHILDREN

SIR,—The paper by Dr. Scrimshaw and his colleagues [1] reports the first properly controlled experiments purporting to demonstrate the value of iodine in prophylaxis against adolescent goitre. It must be observed, however, that the amount of iodide or iodate administered was very large, the equivalent of 5 mg. of iodine every week for from fourteen to twenty-five weeks. This amount is several times that provided by iodised salt, and each dose is about as much as such children's thyroids contain at any one time. In the course of the treatment, the thyroids should certainly have become saturated with iodine. Nevertheless, within sixteen weeks after the administration of sodium iodide or iodate had been discontinued the number of goitres had returned to the original. Sixteen weeks is a remarkably short period for a deficiency disease to manifest itself, particularly since the diet could not possibly have been free from iodine. It would appear that the action of the iodine was a therapeutic one and that it was not merely making good a deficiency, in the ordinary sense of the term.

Department of Chemistry,
New York University
College of Medicine. ISIDOR GREENWALD.

RENIN

SIR,—Your leading article of June 19 contains two irreconcilable statements concerning the effect of renin on the glomerulus: the one asserts that *efferent* glomerular spasm accompanies its exhibition (this is the biochemist's view); the other that *afferent* glomerular constriction results. This second statement is supported by unchallengeable angiographic evidence,[2] which you cite.

Gomez [3] postulated that

$$\text{Efferent resistance} = \frac{\text{Filtration-rate}}{\frac{\text{Gross}}{\text{permeability}} \times \left(\frac{\text{Renal plasma-flow}}{\text{filtration-rate}} - \right)} \times 1328$$

In his view it is imperative, in comparing the same individual under normal conditions and when exposed to the effect of experiment (e.g., renin), that the gross permeabilities of the glomerular bed and the peritubular capillaries remain constant. Proximal interference with the glomerular circulation would alter either the pressure on or the surface area of the filtering glomerular membrane, depending on whether the glomerular blood-supply had been partially or wholly diverted. The formula would then be inapplicable and the deduction of "efferent spasm" invalid.

"Efferent spasm" has been suggested as an explanation of the increased glomerular filtration-rate accompanying a fall in renal plasma-flow, and "afferent spasm" as an explanation of the reverse. It is evident that "efferent spasm" is *not* the explanation of the enhanced glomerular filtration and reduced renal plasma-flow evoked by renin. The Trueta or Oxford mechanism

4. Porter, A. Introduction to Servomechanisms. London, 1950; pp. 4, 12.

1. Scrimshaw, M. S., Cabezas, A., Castillo, F., Méndez, J. *Lancet*, 1953, ii, 166.
2. Daniel, P. M., Prichard, M. M. L., Ward-McQuaid, J. N. *J. Physiol.* 1954, **124**, 106.
3. Gomez, D. M. *Fed. Proc.* 1948, **7**, 41.

has been shown by me [4 5] to explain these changes. Early cortical shut-down by afferent-vessel constriction, before diversionary channels have become patent, impedes the renal blood-flow and reduces its amount. Simultaneously the still patent glomeruli become overfull; their pressure is heightened and increased filtration-rate results. This early stage of the Oxford mechanism has been construed as the stage of "efferent spasm." This stage merges into one where the sluices open, represented by the juxtamedullary circulation becoming established. This brings about a greatly enhanced renal circulation and provides an alternative channel of lessened resistance with a consequent fall in filtration pressure—the so-called "afferent spasm." Renal-artery constriction precedes and accompanies these changes, whose zenith is reached in the anuric phase.

London W.1. JOHN SOPHIAN.

"EARTHING" IN THE OPERATING-THEATRE

SIR,—While the replacement of nearly all non-conducting materials by materials specifically made to allow electrical "earthing" is proceeding steadily, let us not forget the inevitable emergence of another electrical hazard.

We connect the patient to "earth" by various routes. This is as it should be; but if the "earthing" of a diathermy machine is faulty the patient may be seriously burnt by partial contact with it. Several times when attending to a patient while the diathermy was in use, I have felt heat or pain in my finger-tips, as a result of being nicely "earthed" by my new boots. Subsequent examination has revealed partial or total failure of the machine's earthing continuity.

I would therefore, with some urgency, suggest that a simple device be incorporated in the third lead of diathermy machines, so that earthing failure may be immediately manifested by an auditory or visual signal combined with cut-out of the circuit.

London, N.20. R. N. G. ATHERSTONE.

TREATMENT OF DEAFNESS

SIR,—In your issue of May 29, Dr. Fisch sets out the principles of auditory training in adults. May I say that the Audiotherapy Unit has never claimed that the improvement we report is other than a purely heightened ability of the (normal) cortex to deal with the false signals the deaf person receives from his ears. Since the term "hearing" is most certainly applicable to the ability of the cortex to deal with auditory wave-forms, it is only natural that we speak of the improvements we obtain as "improved hearing."

Dr. Fisch feels that auditory training in adults must be a slow, difficult process. May I point out that he refers to only the numerically insignificant group of severely deafened adults. We report improvement obtained without a hearing-aid in mild and moderate degrees of deafness, and with a hearing-aid in moderate to severe degrees. We are fully cognisant of the limitations of the severely deafened [6] and do not claim that they can be rapidly and readily improved.

Mr. Robin (May 8) readily accepts auditory training with a hearing-aid yet cannot visualise it without one. In training the cortex to attach meaning to a set of acoustic symbols the mechanism, method, and results are identical whether the person has a marked degree of deafness and is brought to a mild degree by a hearing-aid, or whether he has a mild degree of deafness to begin with.

Ardente Audiotherapy Unit, London, W.1. ELIZABETH CHADWICK.

4. Sophian, J. *In* Ciba Foundation Symposium on the Visceral Circulation. London, 1952; p. 198.
5. Sophian, J. Toxæmias of Pregnancy. London, 1953; p. 39, diagrams.
6. The New Way to Better Hearing Through Hearing Re-education. London, 1953; pp. 201-208.

AUREOMYCIN IN TEITZE'S DISEASE

SIR,—Since Teitze [1] described a slowly resolving, painful, non-suppurative swelling of costal cartilages, other cases have been reported from various parts of the world.[2–5] But the number on record remains small; the ætiology is still obscure; and hitherto no treatment has been found effective. The following cases suggest that, while sulphonamides and penicillin are of no value, aureomycin may be useful.

CASE 1.—A man, aged 28, had painful swelling of the 2nd right and 4th left costal cartilages of 2 weeks' duration. Pain was aggravated by pressure, coughing, or sneezing, deep breathing, and movements of the arm. Pain and swelling of the cartilages had been noticed 5 days after the onset of an upper respiratory infection resembling a "cold," which had lasted 7 days. When I saw him, the throat was congested but the lungs were clinically and radiologically clear. Locally the skin was free and normal over the swelling, which was confined to the cartilages and tender on pressure especially over the costochondral junction. There was no history of venereal disease; Wassermann reaction and Kahn test were negative. Urethral and prostatic smears were normal. The total leucocyte-count was 7200 per c.mm. (polymorphs 68%, lymphocytes 28%, monocytes 2%, and eosinophils 2%). The erythrocyte-sedimentation rate (E.S.R.) was 8 mm. during the first hour (Westergren). Routine stool and urine examinations were negative.

Teitze's disease was diagnosed, and the patient was given sodium penicillin 100,000 units 3-hourly with sulphamezathine 1·5 g. 6-hourly for 8 days. No local treatment was given. The therapy was ineffective.

The pain gradually subsided in about 8 weeks, but considerable swelling of the affected cartilage was still present after 4½ months.

¶ CASE 2.—A woman, aged 26, had similar painful swelling of the 2nd right costal cartilage, and also a cough. The throat was congested and scattered rhonchi were audible over both lungs. Radiography showed calcified glands in the left hilar area; the rest of the lung fields were clear. Wassermann reaction and Kahn test negative. Leucocytes numbered 8400 per c.mm. (polymorphs 76%, lymphocytes 21%, monocytes 2%, and eosinophils 1%). The E.S.R. was 10 mm. (Westergren). Stool and urine examinations were negative.

She was given aureomycin 500 mg. 6-hourly for 8 days. On the 3rd day definite improvement was apparent, and in 8 days the pain was gone. Swelling almost completely disappeared in 2 weeks. No other treatment was given.

CASE 3.—A man, aged 29, had painful swelling of the 2nd left costal cartilage like that seen in cases 1 and 2, and cough, both of 6 days' duration. The temperature chart showed spikes up to 99°F daily for ten days, after which it was normal. Scattered rhonchi were audible over both lung fields but radiologically the lungs were within normal limits. Wassermann reaction, Kahn test, and urethral and prostatic smears were negative. The leucocytes numbered 7800 per c.mm. (polymorphs 68%, lymphocytes 30%, monocytes 1%, and eosinophils 1%). The E.S.R. was 5 mm. (Westergren). Stool and urine examinations were negative.

Sodium salicylate gr. 15 t.d.s. and local physiotherapy were given for 18 days without benefit. Starting on the 22nd day of the disease aureomycin 500 mg. 6-hourly was given for 6 days. By the 4th day of aureomycin therapy the pain was considerably relieved and by the 7th day it had gone. The swelling diminished and by the 15th day the costal cartilage had returned to normal. No treatment except aureomycin was given.

Gill et al.[2] noted that the condition was associated with a respiratory infection and Geddes [4] confirmed this finding in all his cases. The infection may take the form of a "cold," bronchitis, or even pneumonia. One or more costal cartilages are affected at about the same time or within the space of 2 weeks. The pain and swelling quickly reach their maximum within a few days and may gradually subside in 3–4 weeks, but some

1. Tietze, A. *Berl. klin. Wschr.* 1921, **58**, 829.
2. Gill, A. M., Jones, R. A., Pollak, L. *Brit. med. J.* 1942, **2**, 155.
3. Acharya, B. S. S. *J. R. Army med. Cps*, 1944, **83**, 148.
4. Geddes, A. K. *Canad. med. Ass. J.* 1945, **53**, 571.
5. Deane, E. H. W. *Lancet*, 1951, **1**, 883.

residual swelling may remain indefinitely. Recurrences have been described.[4]

One or more costal cartilages may be involved, but the 2nd costal cartilage is most commonly affected. The swelling is strictly confined to the cartilage involved and is due to chondral and perichondral hyperplasia. Although the cartilage seems to be tender on pressure, stress on the affected costochondral junction from pressure on the cartilage, sneezing or coughing, deep breathing, and movements of the arm is the chief cause of pain. Movements of the arm naturally cause more pain in the affected upper costochondral junctions of the same side. The adjoining rib remains normal and there is never any suppuration in or around the affected cartilage. Erythrocyte-sedimentation rate and total and differential leucocyte-counts remain within normal limits. The patient may be febrile during the first few days of his illness, as in case 3.

Aureomycin appears to have strikingly altered the course of the disease in cases 2 and 3, but more trials are needed to confirm this result. If aureomycin proves to be efficacious, this would support the idea that the disease is caused by a virus. Apparently the respiratory tract is the primary seat of infection.

Military Hospital,
Lucknow, India. INDER SINGH.

CERTIFICATION

SIR,—In some particulars last week's leading article needs correction:

1. The law which already provides for admission as a temporary patient applies only to England and Wales, as does the Royal Commission.

2. In saying that "voluntary patients ought to be able to use their mental hospitals with as little formality as they do a general hospital," you remark that "at present even a voluntary patient must apply in writing to be admitted to a mental hospital." This is entirely misleading. The would-be voluntary patient proceeds to any hospital in England, Wales, and Scotland, asks to be admitted as a voluntary patient, is asked to sign his name upon a printed form, and is straightway admitted. And, since there is no waiting-list, it is much easier to enter a mental hospital than a general hospital. I myself have entered three mental hospitals.

3. I did not suggest that "delayed certification" was "being tried" in Northern Ireland; the fact is that certification has been virtually abolished there. It is "irreversible," in that it is the law, and has been so for six years. Indeed, it is for this reason that the Royal Commission now contemplates following suit.

Edzell, Angus. H. G. WOODLEY.

HEPATIC COMA

SIR,—The use of glutamic acid in the treatment of hepatic coma has re-awakened interest in the blood-ammonia levels in patients with liver disease. Two papers in recent issues of your journal have described findings in this condition (Dr. Singh and his colleagues, May 15; Mr. Riddell and Dr. McDermott, June 19). It is obvious that the determination of free ammonia in blood is difficult. Conway[1] states that there appears to be no free ammonia in normal circulating blood. The mean blood-ammonia level of normal subjects in the survey by Riddell and McDermott is five times that found by Singh et al., and a recent survey by Davidson and his co-workers[2] showed a normal mean twenty times that of Singh et al. Despite this unprecedented discrepancy there appears to be very strong evidence that the blood-ammonia level is raised both in hepatic coma and in cirrhosis of the liver. Most authors have found little correlation between clinical condition and the blood-ammonia level, and it appears that a raised blood-level per se is not sufficient to induce the clinical symptoms associated with hepatic coma.

It is to the brain that small amounts of ammonia are so toxic. Krebs[3] has shown that there is an intracellular enzyme system in the brain which combines glutamic acid with ammonia to form glutamine. Glutamine is normally present in cerebrospinal fluid (C.S.F.) probably as a result of this reaction. We have devised a simple technique for the quantitative measurement of glutamine in C.S.F. and have applied this to fluids obtained from patients in hepatic coma and patients with cirrhosis of the liver. Normally the C.S.F.-glutamine is about 10 mg. per 100 ml.; in hepatic coma we have found values between 30 and 54 mg. per 100 ml. Patients with cirrhosis of the liver uncomplicated by coma gave values from 12 to 27 mg. per 100 ml. It is of particular interest that Singh and his colleagues could not show any difference between the plasma-glutamine-levels of normal subjects and patients with cirrhosis of the liver. We feel that our work emphasises the cerebral aspects of ammonia detoxication; there has been some correlation between the clinical conditions and C.S.F. glutamine concentration. We hope to report this work more fully in the near future.

As a result of our limited experience with the use of glutamic acid in seven cases of hepatic coma we agree with the conclusions of Riddell and McDermott that in the terminal coma of cirrhosis of the liver and in acute hepatic necrosis the need for glutamic acid is probably only one of a multiplicity of deficiencies. In the coma following hæmatemesis from œsophageal varices it is very probable that the sudden increase in protein metabolism may especially tax the glutamic-acid/glutamine system, and in this type of case glutamic acid therapy deserves further trial.

T. P. WHITEHEAD
S. R. F. WHITTAKER
Warwick. A. P. PRIOR.

SIR,—In your columns last year, Dr. J. M. Walshe[4] discussed the beneficial effect of glutamic acid in the coma of hepatic failure, as exemplified by three patients with subacute and chronic liver-disease; he wondered whether it would have any effect on the course of acute virus necrosis of the liver. Mr. Riddell and Dr. McDermott, in their contribution of June 19, describe one case of virus hepatitis treated with glutamic acid among their twenty-nine cases of hepatic coma. We have recently had the opportunity of treating a patient with hepatic coma resulting from acute virus hepatitis.

The patient was a young married woman, aged 33, who had been ill for eight days. Her illness began with diarrhœa, vomiting, and much lassitude and drowsiness. The urine was dark, but obvious jaundice appeared only two days before admission. She had had psychoneurotic symptoms and paroxysmal tachycardia a year previously, but there was no history of jaundice or liver trouble.

She was admitted to Fulham Hospital on May 27, 1954, drowsy, confused, and very jaundiced. Neither the liver nor the spleen was palpable. The urine contained bile (trace) and urobilin (slight excess), but no urobilinogen or bile salts. She was given intravenous 5% glucose saline and protein hydrolysate. Her condition worsened and the coma grew deeper.

On May 28, the liver-function tests were as follows: serum-bilirubin direct positive, indirect 22·3 mg. per 100 ml.; zinc turbidity 22·5 units; colloidal gold positive 2 units; thymol turbidity 15 units; alkaline phosphatase 14·6 units per 100 ml.; prothrombin-time 115 sec. (control 13 sec.).

On May 29 it was decided to try glutamic acid, and 20 g. was given as 23 g. sodium glutamate in the glucose-saline drip. There was no improvement, and the next day the patient was again given 23 g. of sodium glutamate intravenously in 5% glucose. There was no halt in the steady deterioration, and the patient died on May 31.

At necropsy the liver weighed 570 g. There were many areas of necrosis of varying size which in some parts were

1. Conway, E. J. Microdiffusion Analysis and Volumetric Error. London, 1947.
2. Schwartz, R., Phillips, G. B., Gabzuda, G. J., Davidson, C. S. *J. Lab. clin. Med.* 1953, **42**, 499.
3. Krebs, H. A. *J. biol. Chem.* 1935, **29**, 1951.
4. *Lancet*, 1953, i, 1075.

confluent. Histology revealed that much of the liver tissue was necrotic with no semblance of normal structure. There was widespread proliferation of the bile-ducts.

In our patient, as in the one described by your contributors, glutamic acid produced little clinical improvement and its effect was disappointing. Both cases were severe and fulminating and the coma was deep. It may be that in earlier, more slowly progressive cases, glutamic acid will be of value and worth a trial. Further experience will help us to decide.

I am indebted to Dr. P. T. Farnan and my colleagues of the group laboratory for their reports.

Fulham Hospital,
London, W.6. A. L. WYMAN.

BEYOND SPENS

SIR,—Well may you ask (June 19): "do enough doctors of the right type think it worth their while to train for a specialty?" and observe that the public will be ill served if "too many intelligent doctors decide that they cannot afford to be anything but general practitioners." After expressing surprise at the Government's attempt to right a wrong of six years' standing (a wrong sufficiently blatant as to cause concern to "some members of the Cabinet") even you have to admit that the attempt falls short of fulfilment.

Having supported the Ministry's decision to ditch "Spens," you proceed to work up to a proposal which at best would only prolong the agony of those unfortunates who have been more seriously misled by piecrust assurances, and at worst would logically lead to a medical Civil Service with infinite but certain gradations from qualification to retirement.

If voices speaking with your apparent authority give encouragement rather than "reluctant acquiescence" to the Ministry's proposals to discard "Spens" and its moral obligations, then it is high time for us to forget our domestic differences and form a trade union which can and will argue on actual rather than moral grounds.

London, W.1. G. DALLEY.

THE PLIGHT OF SENIOR REGISTRARS

SIR,—It would be a pity if it were felt that consultants write little about the problem of senior registrars because they have no interest in their fate. The trouble is partly that no-one knows the answer and partly that we lack the essential data. What we want to know is:

1. How many senior registrars (and university staff of similar status) are there in various specialties and what is their seniority? How many, for instance, are in their fourth or subsequent years of their senior registrarship?

2. How many consultant appointments have been made in the various specialties in the last three or four years?

3. How many posts are likely to be filled in the next three or four years? In this connection it would be useful to know how many appointments of consultants (*a*) the regional boards and (*b*) the various specialist advisory committees of the regional boards think should be made to provide a comprehensive service.

I presume that the Ministry has most of these data. I am sure, however, that it would help to awaken the profession to the tragedy of the senior-registrar problem if these data could be assembled.

Part of the problem lies in the difficulty many of these men have in getting into general practice, for it is a regrettable and unaccountable fact that some general practitioners prefer recently qualified men to these highly trained and experienced men who would do such excellent work as family doctors.

The fact which is important is that there is a considerable body of first-class senior registrars who are undergoing considerable hardship, and there is reason to believe that quite a few of these could be absorbed forthwith into consultant practice. It must be borne in mind that not only is the inability of these highly trained senior registrars to obtain a fair deal a personal tragedy, but it may well affect the future of consultant practice in this country; for young men, knowing the fate of those who came before them, are already showing signs of avoiding the early steps on the ladder to consultant rank in the form of junior posts, going straight into general practice instead. What may well happen is that a few years hence we shall not have enough good men for consultant posts from whom to choose.

Department of Child Health,
University of Sheffield. R. S. ILLINGWORTH.

NURSING THE TUBERCULOUS

SIR,—A few years ago a national crusade against pulmonary tuberculosis was envisaged. Hospital authorities were invited to set aside beds in general hospitals so that waiting-lists might be slashed and all who required treatment would receive this without delay. Nation-wide coöperation was not forthcoming; and furthermore beds normally set aside for cases of pulmonary tuberculosis have had to lie empty because of an alleged shortage of volunteers to nurse such cases. So much for the crusade.

What is it that makes the nursing of tuberculous patients such an unpopular occupation? Surely it is not only the fear of infection but the dismal vision of hosts of beds full of patients strictly confined to bed, combined with the monotony of innumerable bedpan rounds, and the never-ending bed baths and bed-making, together with frequent medicine rounds, and the serving of meals, the washing up, and associated chores. This goes on day in and day out. Progress is necessarily slow, and no-one seems to get better quickly compared with, say, uncomplicated bacterial pneumonia or appendicectomy.

I believe that this uninspiring picture can be changed.

In the first place it is revolting that a ward should be a combination of a bedroom, a dining-room, a bathroom, and a lavatory. In my practice it is exceptional for patients to have to use a bedpan or to have a bed bath. With a few obvious exceptions, such as acutely ill or febrile and toxic patients or patients on postural retention for cavity closure, all are wheeled to the toilet in a wheel-chair. Similarly they are taken to the bathroom, undressed, bathed, dried, dressed, and returned to bed. Both these procedures are welcomed by patients and staff alike, for obvious reasons.

Furthermore patients who are just getting up are got up at the midday meal and have their meal in the ward at a dining-table close to the electrically heated trolley from which the food is served. Any patients who are strictly confined to bed are nursed at the end of the ward where the meals are served and near the annexes in order to reduce as much as possible the distance covered by the staff.

As regards drugs, *p*-aminosalicylic acid (P.A.S.) is unpleasant to take. It is unpopular with patients because of this and because of its bulk and frequent administration (5 g. four times daily). It is also more expensive than isoniazid, which is given only twice daily and which is pleasant to take as well as stimulating to the appetite and general well-being. In addition P.A.S. stains pyjamas, bed linen, and blankets; and in our experience such stains are permanent.

Our normal drug routine is to give intramuscular streptomycin 1 g. daily, together with oral isoniazid 100 mg. twice daily, for thirty days. Thereafter both drugs are given on the same day every second day. However, certain cases, such as miliary tuberculosis, may have longer courses of daily administration. Routine resistance tests are repeatedly carried out whenever tubercle bacilli are isolated. Our results with this régime are at least equal to those with other combinations of drugs tested in the M.R.C. trials.

As in many establishments, all patients have a thermometer in their bedside locker and are trained in temperature-taking and, if necessary, in temperature-recording.

Patients feel that they are taking an active part in their treatment, as they undoubtedly are, and the beneficial effect on their outlook and morale is evident. They are also kept happy with wireless, television, occasional ward concert parties, and ward cinema shows as well as by diversional and occupa-

tional therapy and a wide range of visiting hours essentially for the advantage of long-distance visitors.

I believe that in such wards devoted to the medical care of patients with pulmonary tuberculosis only a bare minimum of skilled staff is needed to supervise ward management, direct treatment, and give injections. All other work can be done by unskilled staff, including part-time cleaners. This is feasible particularly if the unskilled staff realise the national importance of the work they are doing. More unskilled and skilled volunteers would be forthcoming if the fear of "catching" tuberculosis could be allayed by getting across the idea that there is more likelihood of developing the disease outside than inside sanatoria.

Connaught Hospital,
Hindhead, Surrey. J. MACKAY-DICK.

AN AMERICAN IN BRITAIN

SIR,—A little experience of living and working in the U.S.A. and of international work with American colleagues leads me to sympathise rather with Dr. Cort than with "An American Doctor in England," whose letter appeared last week. The affair has much in common with what befell a good friend and colleague of mine, in whose case there was no question whatever of "draft-dodging," and suggests that a standard procedure is being followed in quite a number of cases. It not infrequently happens that an American abroad who is believed to have rather too progressive views is deprived of his passport and then told that he will be issued with no replacement except a permit valid for only one journey back to the U.S.A. This procedure in itself has been known to cost an American worker his European job.

It has been suggested—not in *The Lancet*—that Dr. Cort has already been found medically unfit for army service, and it would in any case appear that if he admits to having been a Communist at some time in the past he would be considered ineligible for the Armed Forces. If either of these is true, then the issue of draft evasion seems irrelevant. Your correspondent's further suggestion that "the fact that one of his colleagues did remain [in a university post] attests that Communism was not an issue" is too ingenuous; all that it does attest is either that the circumstances of that colleague were unusual or that one particular university does not care whether its staff have been labelled "Communist" or not.

So far as Dr. Cort's future employment in the U.S.A. is concerned, his political past will make him unacceptable to most universities and nearly all commercial concerns; his chances of any sort of research post are hardly worth mentioning. It is true that he can get a licence to practise in any of the States, but any doctor who is known to be in favour of health insurance or a national health service plan is persona non grata to most other doctors, and without their good will is going to find it impossible to establish himself successfully in practice. More than a few young and progressive doctors have failed in practice for this reason during the past few years.

Dr. Cort, we are told, after doing his military service, "could return to England as an immigrant if the country would still accept him." But to do this he would need a U.S. passport, and many recent instances, from those of Paul Robeson and Professor Lattimore down to those of obscure would-be tourists and travelling students, show that with the present proceedings on his record he would be anything but certain to get a passport.

I have no doubt that your American correspondent finds it hard to believe that his country is intolerant without good cause; but he should remember that even Britons have in the past failed to notice gross injustices in their own country and that many Germans found it hard to believe in Nazi concentration camps in the early years of the régime. Europe contains disturbingly many professional men and women who are, in effect, refugees from McCarthyism and other American lapses from high standards of freedom; and on the face of it Dr. Cort seems to be another such refugee from intolerance. Precisely where intolerance becomes oppression and carries the right to political asylum is not well defined; but the Cort case seems, on the evidence available, to deserve a good deal of sympathy.

Public Health Department,
Colchester. JOHN D. KERSHAW.

SIR,—It is difficult to know where to begin an answer to the letter from An American Doctor in England. May I make four points?

1. He takes you to task for publishing Dr. Cort's statement and says: "the press would do well to stick to the official announcements" of the American Embassy and the Home Office. What an extraordinary piece of advice for a free press!

2. He says that Dr. Cort is being recalled only because of "draft dodging," and his having been a Communist is beside the point. One might be more ready to believe this if he did not use such phrases as "if, of course, he [Cort] expects to obtain a professorship he may well be unemployed"; Dr. Cort should "stand up on his hind legs like a man"; Dr. Cort could later return to England if this country would "still accept him."

3. "It is impossible to deprive a natural-born citizen of his citizenship." Would that this were so but, according to *The Times*, loss of citizenship is exactly what Dr. Cort was being threatened with by the U.S. government.

4. Examine the situation in reverse. Were the many hundreds of British citizens in the U.S.A. during the last war expelled from America?

Radcliffe Infirmary,
Oxford. DAVID PYKE.

SIR,—An American Doctor in England claims that people are not dismissed from their posts because of Communism, and he enlarges on the opportunities of employment open to Dr. Cort.

Yet we note that in July, 1953, fourteen university professors had been dismissed because "they declined to answer questions."[1]

The assistant professor of neurology at Columbia University was to be indicted for contempt because he "refused to answer questions."[2]

Jefferson Medical College dismissed three professors because they "had been associated in the past with communist activities."[3]

Professor Lewis, of Brooklyn, had his Fulbright scholarship cancelled because his wife was "under investigation" by Senator McCarthy.

Associate professors Hughes, McGill, and Weisner of Hunter College were suspended because of alleged "communist activities." Each had given over twenty-five years' service. They were given ten days to reply to the charges.[4]

Since former Communists are not called up into the American forces, it is difficult to see why the American government has been so persistent in serving call-up papers on Dr. Cort.

A BRITISH DOCTOR.

SIR,—Your anonymous American correspondent reproves you not for accepting Dr. Cort's statement (for you have made no comment upon it) but for publishing it. To such an extent have conceptions of civil liberty in the U.S.A. become degraded. The word "free" which your correspondent employs has ceased to have any meaning when used in such a context. It is impossible for anyone to doubt, who has read Professor A. V. Hill's letter to the Home Secretary and Dr. Cort's own statement, that Dr. Cort fears political discrimination against him, at least for his career as a

1. *Times*, July 22, 1953.
2. *Ibid*, Nov. 26, 1953.
3. *Ibid*, Dec. 2, 1953.
4. *Daily Telegraph*, April 13, 1954.

scientist, at worst for his liberty. It is not denied that Dr. Cort, having declared his intentions to the authorities, left the U.S.A. to take up a two-year research appointment. Three *months* later, and following the mention of his name in the infamous McCarthy committee, he is told he must return to the U.S.A. to do his service. The facts speak for themselves.

If the Home Secretary yields to the demands of the American police by refusing to allow Dr. Cort to stay in this country until he can apply for naturalisation, it will be plain that justice for an individual is being sacrificed to what is mistakenly considered the public good: yet another example of the age-long error of believing that the end justifies the means.

Bickley, Kent. DUNCAN LEYS.

*** When last week's issue of *The Lancet* was going to press, "An American Doctor in England" called to say that he had intended his letter as a private remonstrance and not for publication. This being so, we thought it best to alter the signature to a pseudonym; but he would like us to give his name to anyone who asks for it.—ED. L.

Medicine and the Law

Domestic or Professional?

A case before Lord Blades in the Court of Session at Edinburgh on June 18 [1] raises issues similar to one recently reported.[2]

A Paisley man is claiming £500 damages from a hospital board of management on behalf of his son who, he alleges, received severe burns of the lumbo-inguinal region by being placed in a cot on the day of his birth, in 1952, in contact with a hot-water bottle by a nurse or nurses at Barshaw Hospital, Paisley. The board plead that they are not responsible for any professional negligence of nurses employed by them, but the plaintiff contends that putting a baby into a cot without allowing it to be burned by a hot-water bottle is a matter of reasonable care and not of professional skill.

Giving judgment allowing proof, Lord Blades said that the defendants' liability clearly depended on the precise nature of the nurses' work at the material time. If what they were doing was part of their professional responsibility, the defendants, as the (Scottish) law stood, might escape liability.

Parliament

Medical Advertising by Television

ON the report stage of the Television Bill in the House of Commons on June 21, Mr. L. D. GAMMANS, Assistant Postmaster-General, moved a new clause providing that the Television Authority must set up an advisory committee from the start to deal with standards of advertising, particularly of goods or services for medical or surgical purposes. No particular bodies had been specified for representation, but the type of committee envisaged by the Government would certainly include representatives of the British Medical Association and the Ministry of Health.

Dr. BARNETT STROSS said that the new clause went some way to meet their objections, but the B.M.A. would not be satisfied until time had shown how the Bill would work, and it was possible to judge whether embarrassment had come to the public health and to the profession generally. He regretted that representatives of the local authorities and the Medical Research Council were not named as members of the committee.

Mr. GAMMANS said that there was nothing to prevent the authority from adding to the advisory committee representatives of such bodies as the M.R.C., public-health authorities, and local authorities. He imagined that the Ministry of Health and B.M.A. representatives would insist on banning the advertising of medicaments of little value. If a medicine was not particularly harmful, but was rather more expensive, that was already covered by the instruction given by the Minister of Health to the National Health Service doctors.

1. *Scotsman*, June 19, 1954; *Glasgow Herald*, June 19.
2. *Lancet*, 1954, 1, 1234.

QUESTION TIME

An American in Britain

In answer to questions on Dr. Joseph Cort's application for a renewal of his work-and-residence permit, Sir DAVID MAXWELL FYFE, the Home Secretary, made the following statement:

Dr. Cort is a United States citizen, who, in June, 1951, was given permission to enter this country for a stay of 12 months to do research at Cambridge University. In May, 1952, he asked for permission to stay for another 12 months to complete his research, and this was granted.

Before his permitted period of stay had expired he informed the Home Office that he had accepted what he described as a permanent post of lecturer at Birmingham University and asked permission to stay in the United Kingdom for this purpose. There was some delay in reaching a decision on this application, but in August, 1953, Dr. Cort was given a further extension to June 30, 1954. In the letter conveying this decision he was informed, with reference to his description of his appointment at Birmingham as permanent, that the extension now granted was temporary and was not to be regarded as equivalent to permanent residence.

In December, 1953, it became known to the Home Office that Dr. Cort had failed to comply with a number of summonses from the American authorities to report for pre-induction examination in connection with United States law relating to military service, and that when asked by the British police, at the request of the American authorities, to explain why he had done so and what were his intentions with reference to his duties under the United States Selective Service Act, he had refused to make a statement.

It appeared from the communication made to Dr. Cort by the American authorities that his persistent refusal to comply with notices to attend for examination would, under United States law, create a presumption that he had left the United States to evade military service, and if this presumption were established he would, under United States law, lose his United States citizenship.

When this came to the attention of the Home Office, Dr. Cort was at once informed that the possible loss of his citizenship was a matter of concern to the department and that a further communication would be sent to him after an approach had been made to the United States authorities in an endeavour to clarify the legal position. The United States consul-general confirmed that if the presumption were established, Dr. Cort would lose his United States citizenship and could return to the United States only on an immigration visa and full compliance with the immigration laws.

In view of this Dr. Cort was reminded on March 24 that his stay in this country was temporary and was informed that, having regard to the information obtained from the United States consul-general, the Secretary of State would not be prepared to grant him an extension after June 30. Dr. Cort did not reply to this letter, but approached a number of people with representations to the effect that if he returned to the United States he would be faced with unemployment and financial bankruptcy and, possibly, a prison sentence. He asked that in view of this he might be allowed to remain here.

I considered very carefully the representations which were then made to me on Dr. Cort's behalf, but I found myself unable to alter the decision. As I pointed out to those who wrote to me, the whole basis of the system of control of aliens in this country is that those who come here on a temporary footing, as almost all aliens do in the first instance, should be in a position to return to their own country or some other which is prepared to receive them. In effect, Dr. Cort was asking that I should make an exception to this established rule in his case on the ground that he ought to be regarded as entitled to political asylum.

There is nothing in the circumstances of Dr. Cort's case to justify regarding him as a political refugee. It is a proud tradition of this country that it has been ready to offer asylum to those who are political refugees in the true sense. Political asylum is a privilege which is not lightly to be invoked, since the grant of it implies necessarily that the Government of the suppliant's country employs methods of political persecu-

tion. The traditional test applied to applications is that the applicant's life or liberty would be in danger on account of race, religion, nationality or political opinion if asylum were refused. I have no reason to think that any of these considerations arise in this case.

I have received two deputations of hon. Members who have taken an interest in this case. I have given my most careful attention to everything they have said but I regret that I am not prepared to grant any further extension.

Insanity and Mental Deficiency among Prisoners

Replying to a question, Sir DAVID MAXWELL FYFE gave the following figures for the number of people certified insane in prisons or borstal institutions in England and Wales, under section 2 of the Criminal Lunatics Act, 1884, during the years 1951, 1952, and 1953. They did not include persons found insane on arraignment or guilty but insane. The figures for 1953 were provisional:

Year	Institution to which removed	Number of persons certified		
		Male	Female	Total
1951	Broadmoor institution ..	21	..	21
	Local mental hospital ..	84	14	98
1952	Broadmoor institution ..	17	1	18
	Local mental hospital ..	97	13	110
1953	Broadmoor institution ..	12	1	13
	Local mental hospital ..	87	18	105

Each case was considered according to its particular circumstances, but in general people who were certified insane while serving sentences of imprisonment or borstal training were not sent to Broadmoor unless they were considered to be unsuitable for removal to a local mental hospital by reason of the violent and dangerous character of their insanity, or of their previous history, or of the nature of the offence of which they had been convicted.

During 1951, 1952, and 1953, the numbers of persons certified mentally defective while detained in prisons or borstal institutions were:

Year	Males	Females	Total
1951	39	3	42
1952	61	8	69
1953	50	4	54

Persons so certified were not sent to Broadmoor, but to appropriate institutions for mental defectives.

Tuberculosis Notifications

Replying to a question, Mr. IAIN MACLEOD, Minister of Health, said that in 1953 the number of primary notifications of new cases of all forms of tuberculosis per million population was 1041 for England and 1289 for Wales. At Dec. 31, 1953, the number of people on clinic registers awaiting admission to sanatoria was 4322 for England and 660 for Wales.

Tuberculosis in Wales

Replying to questions, Mr. MACLEOD said that there certainly tended to be a higher rate of tuberculosis notification in Wales than in England. He was not aware of any specific reason to account for this. In 1953 the number examined by mass radiography increased by 36,000 over 1952, and was about $^1/_4$ million yearly. Beds were already more, pro rata, than in England, and everything possible was being done to recruit more staff. Two new thoracic units were already being set up for surgical cases at Chepstow and Newport.

N.H.S. Patients from Abroad

Replying to a question, Mr. JAMES STUART, Secretary of State for Scotland, said that the number of patients from abroad who obtained N.H.S. treatment was not available as patients were not required to provide evidence of their permanent residence. Apart from the provision of drugs, treatment of non-residents by general practitioners involved no extra Exchequer cost because the aggregate remuneration of general practitioners did not depend on the total number of patients. Special inquiries at particular hospitals in 1950 suggested that not more than one-tenth of 1% of hospital expenditure related to persons from abroad. It could be assumed that the total cost to the Exchequer of treating non-residents under the National Health Service did not exceed £50,000 a year in Scotland.

Diary of the Week

JULY 4 TO 10

Tuesday, 6th

UNIVERSITY OF LONDON
5.30 P.M. (Guy's Hospital Medical School, St. Thomas's Street, London Bridge, S.E.1.) Prof. A. R. McIntyre (University of Nebraska): Electrical Activity in Normal and Pathological Muscles.

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, W.C.1
5.30 P.M. Prof. F. C. Ormerod: Use of Antibiotics in Otolaryngology.

Wednesday, 7th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
5 P.M. Prof. David Slome: Experimental Surgery. (Buckston Browne lecture.)

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane Road, W.12
2 P.M. Sir Harold Whittingham: Medical Problems of Aviation.

UNIVERSITY OF OXFORD
5 P.M. (Radcliffe Infirmary.) Prof. Alexander Brown (Ibadan): Medicine in the Tropics.

Thursday, 8th

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.1
5 P.M. Prof. E. B. Verney, F.R.S.: Renal Excretion of Water and Salt. (Bertram Louis Abrahams lecture.)

UNIVERSITY OF LONDON
5.30 P.M. (St. Mary's Hospital Medical School, W.2.) Prof. Edward W. Dempsey (St. Louis): Some Problems in Cellular Biology as Studied with the Electron Microscope.

Appointments

BONNEY, G. L. W., M.S. Lond., F.R.C.S.: consultant orthopædic surgeon, St. Mary's Hospital, London.

HOUSSEMAYNE DU BOULAY, E. P. G., M.B. Lond., F.F.R., D.M.R.D.: consultant in the diagnostic X-ray department, St. Bartholomew's Hospital, London, and Hill End Hospital, St. Albans.

MCARTHUR, CATHERINE B., M.B. Lond., D.P.H.: M.O.H., borough and rural district of Oswestry, and asst. M.O., Salop County Council.

MCGREGOR, A., M.B. Camb.: asst. M.O.H. and school M.O., Chester.

MILLER, R. G., M.B. Camb., M.R.C.P.: asst. physician (geriatrics), Sunderland H.M.C.

MORISON, J. E., M.D. Belf., D.SC.: consultant pathologist, Northern Ireland Hospital Authority's central laboratory, Belfast.

PEARSON, STANLEY, B.SC. Lond., L.R.C.P.E., D.T.M.: senior casualty officer, Royal Infirmary, Doncaster.

SMALL, W. P., M.B. Edin., F.R.C.S.E., M.R.C.P.E.: asst. surgeon (consultant status), Leith Hospital.

WATSON, A. COSTELLE, M.B. Glasg., D.T.M., D.OBST.: senior asst. M.O., maternity and child welfare department, Leicester.

Appointed Factory Doctors:

GRAU, IGNAZ, M.D. Vienna: Long Eaton, Derby.
MCROBBIE, D. G., M.B. Aberd.: Turriff, Aberdeen.
PLEASANT, D. V., M.B. Brist.: Bristol South, Gloucester.

Colonial Medical Service:

CHADWICK, H. T., M.R.C.S.: M.O., Nigeria.
GRAY, D. K., M.B. Lond.: M.O., Fiji.
SCALLAN, B. F., M.B. N.U.I.: M.O.H., Jamaica.

North East Metropolitan Regional Hospital Board:

BROADBENT, T. E., M.B. Leeds, D.M.R.D.: full or maximum part-time consultant radiologist, North Middlesex Hospital and annexes.

DUNLOP, E. M. C., M.D. Lond., M.R.C.P.: part-time consultant venereologist, Metropolitan Hospital.

FREESE, A. J., F.R.C.S.E., L.D.S.: part-time consultant dental surgeon, Victoria Hospital, Romford.

MILNES, J. N., M.D. Camb., M.R.C.P.: part-time consultant neurologist, Metropolitan Hospital.

WILKINSON, MARCIA, M.A., B.M. Oxfd, M.R.C.P.: part-time consultant neurologist, St. Margaret's Hospital, Epping.

South East Metropolitan Regional Hospital Board:

DANBY, T. A., T.D., M.B. Manc., D.P.H.: consultant psychiatrist, Leybourne Grange.

DURHAM, M. P., M.A., M.B. Camb., F.R.C.S., M.R.C.O.G.: consultant obstetrician and gynæcologist, south-east Kent area.

WADSWORTH, P. V., M.A., B.M. Oxfd, F.R.C.S.: consultant in E.N.T. surgery, Brighton and Lewes and Mid-Sussex area.

Births, Marriages, and Deaths

DEATHS

JOHNSTONE.—On June 14, at Highroyds, Menston, Leeds, John Stephen Johnstone, M.B. Aberd., DIPL. PSYCH., aged 45.

Notes and News

PRESENTATION TO SIR ALEXANDER FLEMING

AT St. Mary's Hospital Medical School, London, on June 29, the twenty-fifth anniversary of the discovery of penicillin was marked by a meeting at which the Duke of Edinburgh made a presentation to Sir Alexander Fleming, F.R.S., on behalf of the president and council of the school. The Earl of Verulam, president of the medical school, spoke of the happy juxtaposition of this and the Wright-Fleming Institute. The school, now celebrating its first centenary, had derived great benefits from its continuing contact with research. His Royal Highness said that it gave him much pleasure, as chancellor of the University of Edinburgh, to make this presentation to the rector of the University of Edinburgh. Sir Alexander Fleming, in a speech of thanks, acknowledged his debt to his great teacher, Sir Almroth Wright, perhaps the greatest man associated with St. Mary's in the past hundred years. He himself had been fortunate to make an observation which others had overlooked. From that tiny mould, half the size of a blood-corpuscle, huge factories producing penicillin had now arisen; tons of the antibiotic were being manufactured, and it was so cheap that it could be fed to pigs and poultry. It was the only antibiotic not protected by patents—but he was not averse to the protecting of drugs, for American institutes which had furthered antibiotic research had been founded on revenues obtained in this way. He presented the Duke with a mounted culture of the original strain of *Penicillium notatum*.

JUNIOR HOSPITAL MEDICAL OFFICERS

THE Minister of Health and the Joint Consultants Committee have agreed (H.M. [54] 58) that there is no objection of principle to J.H.M.O. posts with limited tenure. It is thought that the present practice of making all these posts permanent has led to "an excessive rigidity in the junior staffing of many hospitals." The Minister suggests that before advertising a post hospital authorities should consider whether the appointment might not be for three to four years. It would be open to the holder of such a post to apply for reappointment but the Minister admits that he hopes that such reappointment will be the exception rather than the rule. This new procedure will apply only to vacancies and will not affect those who already hold J.H.M.O. posts.

THE LISTER INSTITUTE

AT the Lister Institute one feature of the past year [1] was the setting up of the new Guinness-Lister research unit, which began work on Oct. 1, with Dr. B. A. D. Stocker as director.

Mr. A. F. B. Standfast and Miss Jean Horton, PH.D., have continued work on chemical fractionation of *Hæmophilus pertussis*, to isolate the antigen inducing protection in mice. Miss H. E. Rowatt, PH.D., has worked on the growth of *H. pertussis* in media containing blood. Mr. Standfast and his colleagues continued work on the mouse test for potency of whooping-cough vaccines, for the M.R.C. whooping-cough committee.

Dr. D. McClean, Mr. L. Vallet, and Dr. L. H. Collier have continued their investigation of the antigenicity of vaccinia inactivated by ultraviolet light. Dr. Collier has concluded his study of methods of preserving vaccinia virus. A vaccine of partially purified virus freeze-dried in 5% peptone is stable on storage, conforming with the standards required by the Therapeutic Substances Regulations for at least one month at 37°C, whereas glycerinated lymph becomes useless within a few days at this temperature. This vaccine has proved satisfactory in extensive trials by the three armed Services. A technique of large-scale manufacture has been devised. The dried vaccine will be available for use in hot climates and will partly replace the glycerinated lymph held as epidemic reserves in this country.

Dr. W. d'A. Maycock and Mrs. L. L. Lam, M.SC., have investigated the mechanism of the prolonged urinary excretion of intravenously injected dextran, in rabbits and mice, and its uptake by, and rate of disappearance from, certain tissues, particularly the liver.

Prof. W. T. J. Morgan, F.R.S., deputy director of the institute, and Mr. D. A. L. Davies, PH.D., have completed and published their work on the O somatic antigen of *Shigella dysenteriæ* (shiga).

The blood-group research unit has continued work on "new" blood-group antibodies and genetical investigation of the related antigens. Much of the unit's time during the year was spent on a new Rh antigen, f, present in the blood of two-thirds of white people. Blood-grouping of families was continued for evidence of genetic linkage among blood-group genes and between these and certain disease genes. The unit is collaborating with Dr. Sheila Callender, of the Nuffield Department of Clinical Medicine, Oxford, in a genetical and hæmatological study of pernicious anæmia, and with Dr. Eliot Slater and Mr. J. Shields, of the Maudsley Hospital, in the investigation of twins.

These and many other pieces of research are described in the governing body's habitual unemphatic style.

THE S.H.M.O.

SOME 200 senior hospital medical officers attended a meeting convened by Mr. G. Waring Robinson, of Leicester, and held at B.M.A. House, London, on May 29, when a National Specialists Group was formed with Mr. Waring Robinson as chairman, Mr. George Lowe (Tiverton) as vice-chairman, and Dr. W. J. Wilson (Sheffield) as hon. secretary.

The Chairman said that the S.H.M.O. was appointed only when it was known that he had a wide experience in his specialty; generally he possessed a higher qualification. He was expected to be able to take complete clinical control, differing in no way in this respect from his consultant colleagues. The relation of consultants to S.H.M.O.S was not that of commanding officers to lower ranks. The senior area consultant was responsible for the smooth running of his department, and any working arrangements had to be made in consultation with his colleagues, whether consultants or S.H.M.O.S. Other speakers emphasised that the S.H.M.O., like other senior doctors, including general practitioners, worked without supervision.

The Chairman also pointed out that in the S.H.M.O. grade at present the prospects of promotion were practically nil, except perhaps in certain specialties. Speaking broadly, the S.H.M.O., when applying for a post, was in competition with senior registrars from teaching hospitals; and he thought that so long as an intermediate grade of this kind was retained a senior registrar should attain consultant status by passing through it. If the grade were retained, promotion by merit should be an essential feature of the service, and anybody worthy of the rank of consultant should have the chance to compete. The meeting expressed "its complete lack of confidence in the work of the earlier review committees, believing that in many instances the reviews were grossly unfair." It also expressed the opinion that "pending the abolition of the grade the remuneration of senior hospital medical officers should be not less than 80% of the consultant scale." After strong exception had been taken not only to the term S.H.M.O., but also to all alternatives including such words as assistant, associate, or deputy, a resolution was passed:

> That the title S.H.M.O. cease to exist and that under the generic term "specialist" the title "physician," "surgeon," "pathologist," "radiologist," &c., be used.

OLD MEN IN COMMON LODGINGS

Miss E. M. Sargaison has made a survey of elderly men living in common lodging-houses in Belfast.[1] As almoner of the geriatric unit of the Belfast City Hospital, she found that many patients admitted from these places were suffering mainly from neglect, loneliness, or inability to face the winter inadequately clothed or fed. With the aid of the Nuffield Provincial Hospitals Trust, she investigated the reasons that led them to adopt lodging-house life in preference to living at home or in a residential home, and she examined the conditions in seventeen common lodging-houses. 371 men over sixty years of age were interviewed and asked about their previous lives, reasons for living in lodging-houses, incomes, food and social habits, hospital admissions, mobility, and future plans. The age-distribution of these men reached its peak at seventy to seventy-four. 55% were single, most others widowers or separated: only 7 were married. 47% were unskilled workers.

Medical complaints were noted at interviews and were of six main types—bronchitis (32%), "rheumatics" (16%),

1. The Lister Institute of Preventive Medicine: Report of the Governing Body, 1954. Issued by the institute, Chelsea Bridge Road, London, S.W.1.

1. Growing Old in Common Lodgings: a survey of elderly men and their living conditions in Belfast common lodging houses. By E. MIRIAM SARGAISON, A.M.I.A., senior almoner, Belfast City Hospital, 1954. Pp. 64. 3s. 6d. Obtainable from the Nuffield Provisional Hospital Trust, Nuffield Lodge, Regent's Park, London, N.W.1.

bad eyesight including blindness (15·6%), painful feet (8·6%), skin complaints and varicose veins (6·7%), and visible deformities including amputations (12·9%). In June to December, 1951, 76 had been admitted to the Belfast City Hospital alone, 62 to medical wards and 14 to surgical. Ultimately the aged lodging-house man may become a long-stay hospital case because of neglect and malnutrition; some were readmitted to hospital as many as five times in a year. The main reason for taking to lodging-house life was destitution. Many would have liked to continue work not merely for financial reasons but for its diversion. The main attraction of the common lodging-house was its independence, and they preferred their anonymous hand-to-mouth existence to living in a residential home. Their main hardships were deficiency of food, clothing, living amenities, and (especially) employment.

Miss Sargaison suggests that a change in the system of supervision and registration of common lodging-houses, and better selections of wardens, would help to improve amenities. A resident community centre, with accommodation midway between that of a residential home and a lodging-house, with adequate heating, privacy, individual lockers, working possibilities, and a cheap midday meal, with a lady warden to supervise and cope with minor ailments, and with recreational and workshop facilities, might better enable these old men to maintain their self-respect and independence.

BRITISH-AMERICAN HOSPITAL IN MADRID

To meet the growing needs of the English-speaking community in Spain, a 21-bed hospital is being built in the faculty of medicine area of Madrid's university city, on land provided free by the Spanish government. It will replace the 5-bed nursing-home set up in Madrid in 1923. The new hospital, which is to be opened in September, will be staffed by a British matron and three sisters and by Spanish nurses trained in England. As Spanish law requires that every doctor practising in Spain must have Spanish qualifications, the resident surgeon will be a Spanish doctor with experience of practice in England and the United States.

The hospital has a large garden and a view to the snow-capped Guadarrama Mountains. It is a long, low, red-brick building on three floors, built so that two more floors can be added. It will have an operating-theatre, X-ray facilities, maternity ward, and nursery for ten children. The U.S. Public Health Service has given an iron lung, the only one in Spain for civilian use. A library provided by the British and American governments will be open to all doctors in Spain. The cost of building and equipping the hospital is estimated at £75,000, which has been contributed by English-speaking residents and British and American firms. It is hoped to establish an endowment fund, as the hospital is dependent on fees and voluntary contributions.

THE ELDERLY WORKER

A STUDY of 320 of the older men employed in maintenance depots of the London County Council's housing and valuation departments has been made by Mr. F. Le Gros Clark as part of the Nuffield Foundation's investigation of the needs of old people.[1]

The present study concerns the later working lives of 120 labourers, 100 painters, and 100 other craftsmen, over the age of sixty. Most of them were traced to the end of their working lives as building employees, though some may have found further employment. They were all on maintenance and repair work, which is usually suitable for an elderly man, and conditions were very favourable for the retention of elderly craftsmen and labourers, because in the immediate post-war years young building labour was scarce.

All were apparently fit for the job as they approached their sixties. But of every 100 men fit at sixty not much more than 70 were still fit by sixty-six. A few had died in the interval, and others were more or less incapacitated by age or impaired health. After sixty-six the decline in numbers was steady and continuous, so that at seventy only about 30 of the original 100 were still at work. Most of those remaining at work after the mid-sixties could probably not have stood the pace in modern housing-construction.

Many who remained at work into their seventies were men of unusually sound constitution, ageing, but not ailing much. These exceptional men are found in all industries but are not representative of the ordinary run of men. In the later sixties a considerable number retired with various degenerative complaints, rheumatism, or chronic bronchitis. The report suggests that building workers are not necessarily more prone to these than other men, but that the nature of their work makes such ailments a serious handicap. The bout of sickness cannot be "worked off" as readily as in a man twenty years younger; and the elderly man is obliged to retire. At least 17% tried to resume work too soon after a bout of illness, remained at work for a month or two, and then retired. Some admitted that they could not regain their confidence and skill. This experience may be commoner in industry than is realised, and Mr. Le Gros Clark believes that measures of reablement might salvage a number of elderly men for a few more years of useful work.

Not much "light" work can be found for ageing men around building depots, and this difficulty is fairly general throughout modern industry. There was no great difference among the various crafts, or between craftsmen and labourers, for men in the late sixties and early seventies. The season of the year, too, seemed to have little influence in deciding when a man finally retired, though bronchitis was commoner in winter.

The problem, in Mr. Le Gros Clark's opinion, is one that will have to be studied job by job; for to a large extent it is his job that ultimately decides how long a man can carry on effective work.

1. The Later Working Life in the Building Industry. A Study of 320 Ageing Maintenance Workers. By F. LE GROS CLARK, M.A. Obtainable from the Nuffield Foundation, Nuffield Lodge, Regent's Park, London, N.W.1. 1954. Pp. 21.

University of Cambridge

On June 12 the following degrees were conferred:

M.D.—Robert Crawford, J. S. Jenkins, H. K. Meller, R. A. Womersley.

M.B.—Elizabeth A. Eldon.

University of London

Prof. H. R. Robinson, D.SC., F.R.S., emeritus professor of physics at Queen Mary College, has been elected vice-chancellor for the remainder of the present session and for the session 1954–55, in succession to Sir Roderic Hill, who has resigned on medical grounds.

Dr. J. A. C. Knox, lecturer at King's College, has been appointed to the chair of physiology at Queen Elizabeth College.

Dr. Knox graduated M.B. at the University of Glasgow in 1935, and after holding house-appointments at Glasgow Royal Infirmary he was appointed lecturer in physiology in the university there. He took his M. D. with honours in 1948.

Dr. D. R. Wilkie, Locke research fellow of the Royal Society, has been appointed to the readership in experimental physiology at University College.

University of Bristol

At recent examinations the following were successful:

M.D.—N. C. Tanner.

M.B., Ch.B.—Mary E. Moore (first-class honours); K. R. Gough, D. B. Paintin (second-class honours); G. A. J. Ayliffe, J. F. Baden-Daintree, Vivian Baker, C. A. Bickford, J. M. B. Burn, J. T. Bush, T. H. P. Chatfield, J. R. Clamp, Mavis E. Coutts, G. G. Crabbe, Violet E. Dadds, R. N. Davies, G. N. Febry, D. W. Fortune, Angela C. Fowler, D. B. Fowler, J. S. Hughes-Games, J. L. James, F. E. S. Keiller, Jean D. Kelly, C. A. Milner, E. J. R. Morgan, D. G. Osmond, J. M. V. Packer, Ruth D. Penn, Melvin Roylance, R. K. M. Sanders, Harry Savery, Ronald Seymour-Shove, F. G. Spear, D. M. M. Thomson, D. H. Waldron, M. R. Wills, G. C. B. Winter; J. A. Beel, M. J. Page (in Group I completing the examination).

D.P.M.—A. E. P. Swinson.

Queen's University, Belfast

At recent examinations the following were successful:

M.D.—F. Duff (with high commendation); R. G. S. Malone, J. A. Weaver (with commendation); W. T. McClatchey, W. T. E. McCaughey.

M.B., B.Ch., B.A.O.—J. P. Alexander, R. N. Armstrong, L. C. Banks, Margaret M. Beath, Elizabeth M. Beattie, * E. P. Berwick, V. H. A. Black, D. S. Bolton, J. M. Bridges, F. R. B. Brown, Georgina D. Brown, Kathleen P. Browne, Margaret E. Burns, R. S. J. Clarke, J. H. Connolly, Aileen F. Connon, N. W. B. Craythorne, Florence M. Curran, Alice L. Davis, T. A. J. Dawson, J. C. Devlin, P. C. Elwood, N. D. Farnan, G. W. Fenton, J. J. Furlong, E. F. Glasgow, Helen M. Gorman, P. A. Gorman, Arthur Hamilton, H. D. Hayes, A. S. Hunter, Kathleen A. Irvine, Edna M. Irwin, B. F. Jamison, R. E. Kemp, B. S. L. Kidd, D. D. Kinn, S. J. Knox, Elizabeth P. Lees, Lavinia W. Loughridge, J. H. Lowry, T. J. Lynch, H. A. Lyons, J. E. Lyttle, W. A. G. MacCallum, W. B. McConnell, Edith L. MacDermott, Rosemary H. McKinney, R. A. Mackintosh, D. F. McLaughlin, W. P. McMillin, K. G. Maguire, J. D. Mathers, R. E. Morrow, H. S. Nataros, W. J. Nicholson, Norah V. O'Neill, Alastair I. Y. Orr, P. R. B. Pedlow, J. H. Robertson, Ashleigh Roundhill, M. F. Russell, E. F. Sargaison, R. M. Shearer, June M. P. Shuttleworth, H. B. Stentiford, I. R. Wallace, James Weatherup, S. M. Young.

* First-class honours.

University of Glasgow

Mr. Ian Donald, reader in obstetrics and gynæcology in the University of London at the Institute of Obstetrics and Gynæcology, has been appointed to the regius chair of midwifery in succession to Prof. R. A. Lennie, who retires on Sept. 30.

Mr. Donald, who is 43, was educated at Fettes College, Edinburgh, and the Diocesan College, Rondebosch. He graduated B.A. at the University of Cape Town in 1930. He returned to this country to study medicine at St. Thomas's Hospital, and graduated M.B. Lond. in 1937. While still a student he devised an automatic double-siphon bladder-irrigating apparatus. After holding house-appointments at St. Thomas's he was appointed resident obstetrician there in 1939 and obstetric tutor in 1941. The following year he joined the medical service of the R.A.F. and till 1946 he served at home and overseas with operational squadrons. In 1944 he was mentioned in despatches and in 1946 he was appointed M.B.E. On demobilisation he returned to St. Thomas's as obstetric registrar, and in 1947 he was appointed an ex-Service specialist in gynæcology there. In the same year he obtained the M.D., and M.R.C.O.G. In 1949 he became chief assistant at the Chelsea Hospital for Women, and in 1951 reader in obstetrics at St. Thomas's Hospital Medical School. He took up his present post in 1952. His more recent published work, and the Blair-Bell lecture which he delivered this year to the Royal College of Obstetricians and Gynæcologists, have dealt with respiration of the newborn, and several articles in our columns have described his apparatus for "augmented respiration," by which the patient's own respiratory efforts, however weak, are picked up and magnified. His textbook on *Practical Obstetric Problems* is now in the press.

On June 25 the following degrees were conferred:

M.D.—H. F. Jarvie.
Ch.M.—Henry Wapshaw (commendation).

Royal College of Surgeons of England

On Monday, July 12, Dr. R. A. M. Case will deliver the Joseph Henry lecture on Tumours of the Urinary Bladder as an occupational disease. On Friday, July 16, Prof. M. A. Rushton will deliver the Charles Tomes lecture on the Anomalies of Human Dentine. Both lectures will be given at 5 P.M. at the college, Lincoln's Inn Fields, London, W.C.2.

Royal Australasian College of Physicians

At the annual meeting of the college held in Melbourne in May, the following took office for 1954–56:

President, Dr. C. G. McDonald; vice-presidents, Dr. Ralph Whishaw, Dr. A. D. S. Whyte, Dr. Ian J. Wood; censor-in-chief, Dr. T. M. Greenaway; honorary treasurer, Dr. W. P. MacCallum; honorary secretary, Dr. H. Maynard Rennie; past president, Sir Alex Murphy.

The following were elected to the fellowship:

P. L. Bidstrup, C. R. Furner, S. J. M. Goulston, K. S. Harrison, Mary Heseltine, James Isbister, M. R. Joseph, V. J. McGovern, F. R. Magarey, S. Ralph Reader, S. E. L. Stening, D. G. Duffy, H. B. Kay, P. J. Parsons, W. McI. Rose, H. J. B. Stephens, Marion Wanliss, H. N. Robson, J. M. Bonnin, R. F. West, M. H. Aiken, C. G. Riley.

The following, having satisfied the board of censors in Australia, were admitted to the membership:

C. R. Boughton, J. C. Quoyle, G. H. Neilson, J. J. Sullivan, S. G. Anderson, V. G. Bristow, K. G. Chatfield, A. Fisher, J. R. Kelly, W. R. Kingston, B. L. Marks, R. Motteram, M. J. Robinson, A. K. Cohen, H. R. Elphick, O. B. Tofler.

The following, having satisfied the board of censors in New Zealand, were also admitted to the membership:

R. H. Caughey, H. K. Ibbertson, J. K. Laing, T. V. O'Donnell, I. A. M. Prior.

Order of St. John of Jerusalem

The Queen has sanctioned the following promotions in, and appointments to, this order:

As Knights.—O. T. J. C. de H. Clayre, M.R.C.S.
As Commanders.—Major J. R. Hamerton, T.D., M.B., R.A.M.C., T. D. W. Fryer, M.B., E. R. Weaver-Adams, M.B., Anacletus Byrne-Quinn, M.B., N. M. Maclennan, M.D., H. B. Pierce, M.B., G. P. Williams, M.R.C.S., E. M. B. West, O.B.E., B.M., Surgeon Rear-Admiral R. W. Mussen, C.B., C.B.E., F.R.C.P., Air Vice-Marshal R. H. Stanbridge, O.B.E., M.R.C.S., Mrs. Mary A. Chalmers, M.B.
As Officers.—J. L. McKenzie-Brown, O.B.E., M.R.C.S., Major-General W. A. D. Drummond, C.B., C.B.E., F.R.C.S., Colonel Ambrose Meneces, C.B.E., D.S.O., M.R.C.P., D. A. Davies, F.R.C.S., L. H. Wharton, M.B.E., M.R.C.S., P. E. Creswell, M.R.C.S., R. V. C. Richards, M.R.C.S., P. W. Dill-Russell, M.R.C.S., Surgeon Captain A. A. Pomfret, O.B.E., M.B.
As Associate Officers.—Yeo Choon Hooi, L.R.C.P., Joseph Shibko, M.R.C.S.

International Congress on Chest Diseases

This congress, which is sponsored by the council on international affairs of the American College of Chest Physicians, is to be held in Barcelona, from Oct. 4 to 8. Further information may be had from Prof. Anthony Caralps, the secretary-general, Corcega 393, Barcelona, Spain.

St. Bartholomew's Hospital Medical College

At 5.30 P.M. on Monday, July 19, in the physiology lecture theatre, Charterhouse Square, E.C.1, Dr. Seymour S. Kety, associate director of the National Institute of Health, Bethesda, and professor of clinical physiology in the University of Pennsylvania, will lecture on the Theory and Applications of Inert Gas Exchange.

Saint Mary's Hospital, Portsmouth

On June 19 Miss Patricia Hornsby-Smith, parliamentary secretary to the Ministry of Health, opened a new twin operating-suite at this hospital. The cost of building and equipping the theatres was over £50,000 and, as Miss Hornsby-Smith pointed out, it was the largest capital scheme in the western area in the current year.

Fellowships in Clinical Research

The Medical Research Council have made the following appointments to fellowships in clinical research for 1954–55:

Dr. D. R. COLES (University Department of Medicine, Bristol Royal Infirmary); Dr. VALERIE A. COWIE (registrar, Maudsley Hospital, London); Dr. E. A. HARRIS (medical registrar, Western General Hospital, Edinburgh); Dr. J. G. MURRAY (Surgery Department, University of Aberdeen, and Department of Anatomy, University College, London); and Dr. MARY SMITH (registrar in medicine, Royal Infirmary, Glasgow).

Universities Federation for Animal Welfare

The federation is holding a summer school at Knuston Hall, Northamptonshire, from Sept. 18 to 25. Further information may be had from Miss M. Williams, UFAW, 7A, Lamb's Conduit Passage, London, W.C.1.

Central Council for Health Education

An exhibition of foot health built into a caravan will tour clinics and welfare centres in the South Gloucestershire area from Sept. 13 to 23. The van will contain an educational section on foot health for children, on foot care for the elderly, and a model shop, not for selling, but for teaching shoe-fitting.

Rehabilitation of the Disabled "White Collar" Worker

The British Council for Rehabilitation is holding a conference on this subject on Tuesday, July 13, at 10 A.M., at the Skinners' Hall, 8, Dowgate Hill, Cannon Street, London, E.C.4. Speakers will include Dr. Oswald Savage, Dr. R. D. Lawrence, Dr. William Evans, Dr. F. Avery Jones, Dr. C. O. S. Blyth Brooke, and Dr. W. Lindesay Neustatter. Further particulars may be had from the secretary of the council, Tavistock House (South), Tavistock Square, London, W.C.1.

Royal Society

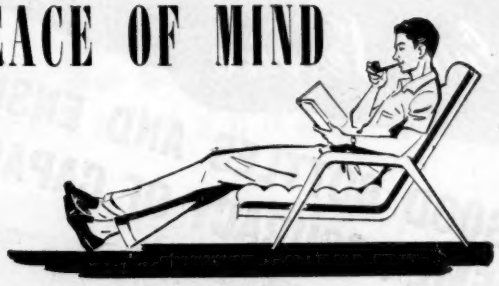
Last year the society instituted, with the Nuffield Foundation, a scheme to enable scientists "to pursue research, learn techniques, or follow other forms of study in natural science in countries other than their own in the Commonwealth where the physical or personal environment, or both, are peculiarly favourable." The first awards include a bursary for Mr. J. Crossland, PH.D., lecturer in physiology, St. Andrews, to enable him to visit Montreal to collaborate with Dr. K. A. C. Elliott in further studies on the behaviour of acetylcholine in the brain.

Microbiological Institute Built out of Royalties

On June 7 a new institute of microbiology was opened at Rutgers University, New Brunswick, U.S.A. It has been built, at a cost of $3\frac{1}{2}$ million dollars, with the university's share of the royalties on the sale of streptomycin, and it is directed by Mr. Selman A. Waksman, PH.D., in whose laboratories this antibiotic was discovered ten years ago. According to a report in the *New York Times* of June 8, Dr. Waksman estimates that the royalties paid by commercial producers of streptomycin amount to about 5 million dollars, and they are distributed as follows: $82\frac{1}{2}\%$ to the Rutgers Research and Endowment Foundation; $7\frac{1}{2}\%$ to associates and students of Dr. Waksman; 5% to the Foundation of Microbiology; and 5% to Dr. Waksman. He hopes that the new institute will be a centre where scientists from all parts of the world may gather "to work, to learn, and to teach."

In our advertisement columns this week applications are invited for a whole-time post as junior assistant editor of *The Lancet*. An adjacent notice describes a vacancy on the staff of *Family Doctor*, which is looking for a medical assistant editor with special experience of writing for the public.

PEACE OF MIND



induced by 'PULVULES'* **'DEXYTAL'**

'Sodium Amytal,' 1 grain two or three times daily, has an accepted place in the treatment of the depressive and anxiety neurotic. The patient who needs in addition the elevation of mood which can be obtained from dexamphetamine will often benefit greatly from the combined treatment now available in 'DEXYTAL.'

One capsule of 'DEXYTAL' taken two or three times daily will often prevent the periodic breakdown of the chronic depressive patient. 'DEXYTAL' is of especial value where the underlying cause cannot be removed—enabling such patients to face their difficulties with greater insight and cheerfulness.

* TRADE MARK

FORMULA: Each capsule contains 65 mg. (1 gr.) 'Sodium Amytal' brand sodium amylobarbitone and 5mg. dexamphetamine sulphate.

PACKING: 'DEXYTAL' 'Pulvules'* are available in bottles of 40, 100, 500 and 5,000.

Lilly TRADE MARK ELI LILLY AND COMPANY LIMITED · BASINGSTOKE · HANTS

You can have

absolute

confidence . . .

With L.H.C. you can safely

use the finest gauge suited to the operation.

Finer gauges mean less scar tissue and quicker healing.

The tensile strength of all gauges of London Hospital Catgut

is higher than that of the standards prescribed by the B.P.

Specify L.H.C. for Strength

in

LONDON HOSPITAL CATGUT

The Complete Service

USE GOOD BOTTLES AND ENSURE EXTREME ACCURACY OF CAPACITY

AVAILABLE FROM STOCK

UGB

FITTED KORKALITE MOULDED OR ALUMINIUM CAPS

CORKMOUTH

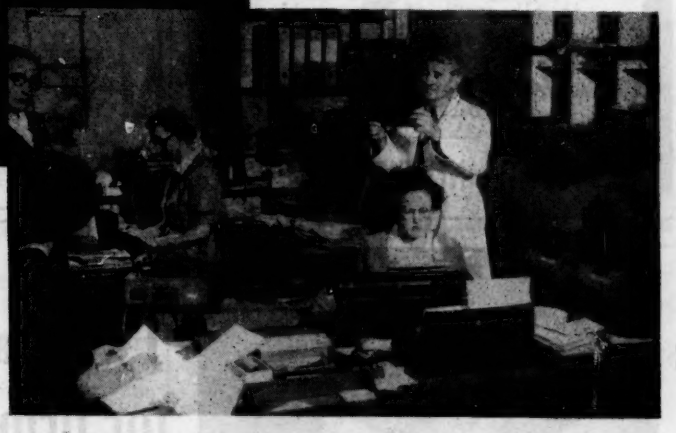
UNITED GLASS BOTTLE MANUFACTURERS LTD

8, LEICESTER STREET, W.C.2 · *Telephone:* GERRARD 8611 (18 Lines) *Telegrams:* UNGLABOMAN, LESQUARE, LONDON

The Emidicta

COMPLETE RECORDING SYSTEM

FOR— HOSPITALS, SPECIALISTS, and G.P.'s



ON STAND NO. 27
B.M.A. EXHIBITION
KELVIN HALL
GLASGOW
JULY 1st-9th

you can see and try out the latest Emidicta Noise Suppressor Microphone which has made possible the introduction of an entirely new field of recordings in the Operating Theatre. Trials on this new Microphone have recently been successfully completed at a famous Scottish Hospital.

Let us also tell you how Hillingdon Hospital has reduced delays in outward correspondence by Emidicta (telephone) Recording. The Emidicta offers a tremendous saving in time to the Specialist with a heavy post bag.

Our staff will be glad to tell you of other installations which have led not only to greater convenience to the Doctor and Hospital Administrative Staff, but also to effective economies in administrative costs.

E.M.I. SALES & SERVICE LTD.

Emidicta Division (Dept. 108)

HEAD OFFICE: 363-367 Oxford Street, London, W.1. Telephone : Mayfair 8597, Grosvenor 7127/8.

135 Renfield Street, Glasgow. Telephone: Douglas 6061

EM.94L

WHEN PRESCRIBING CHLORODYNE
medical men should be particular to specify

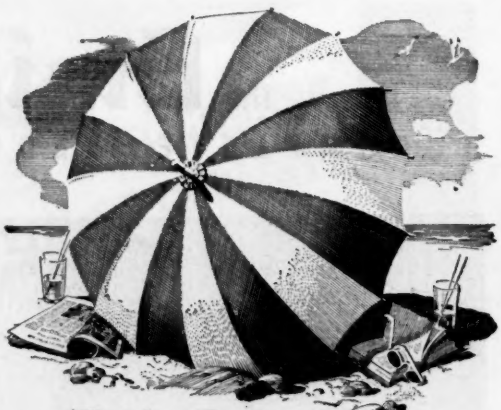
Dr. J. Collis Browne's CHLORODYNE

The Original and only genuine Chlorodyne

used with unvarying success by the Medical Profession in all parts of the world for over **100 YEARS**

Always insist on "Dr. Collis Browne's"

THERE IS NO SUBSTITUTE



Two's Company . . . with PLAYER'S No. 3

The Quality Cigarette

[3P117A]

P4

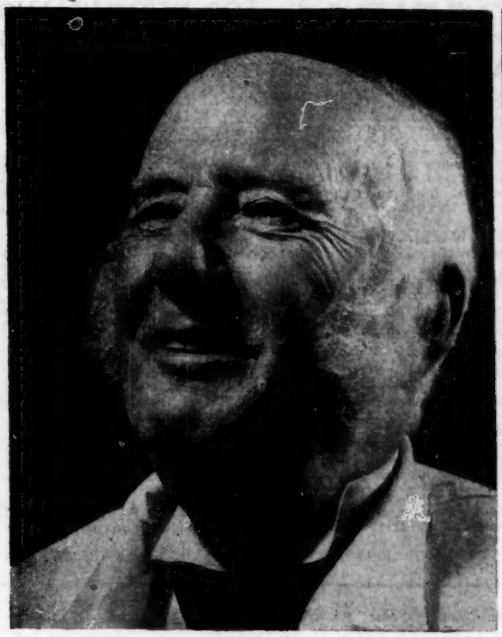
Two-way stretch for firm, even support

In cases of sprains or weak joints a Lastonet elastic bandage can be relied upon for firm even support without restricting movement. The open net construction allows the air to circulate freely. In standard lengths of 5 yards when fully stretched and widths of 2½", 3", 3½" and 4".

Lastonet
ELASTIC NET SUPPORTING BANDAGE

* **Can be prescribed under the National Health Scheme**

LASTONET PRODUCTS LTD., CARN BREA, REDRUTH, CORNWALL



"Most people know..."

says OLD HETHERS

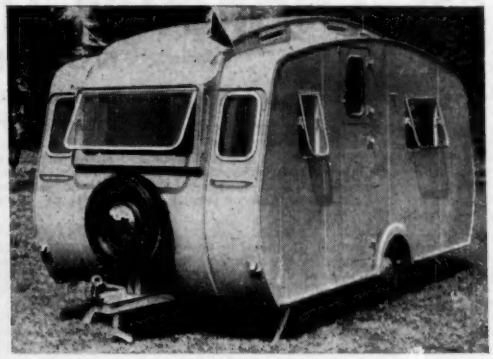
Most people know that barley water is a very good drink when folks are feverish, though some still think it means a lot of trouble, stewing and straining pearl barley. But, bless you, with Robinson's 'patent' Barley it's no trouble at all—just as easy as making cocoa. And cheap too—a 1/7½d. tin makes forty-eight pints.

Robinson's

'PATENT'

Barley

CVS-39



SEE the Superb **Safari** FOUR *De Luxe* CARAVAN

WINNER **Class 2 Award**

BRITISH CARAVAN ROAD RALLY

CONCOURS D'ELEGANCE

CHELTENHAM 1954

Folder on request

PEARMAN BRIGGS LTD. CHELTENHAM ROAD, GLOUCESTER (Works: Cainscross, STROUD) Phone 24192

FIRE!

OUR WORKS LOST BUT FOR

NU-SWIFT!

"It seemed incredible... flames shot up everywhere... but we recharged each Nu-Swift six times and saved our factory... please send us 108 replacement charges."

NU-SWIFT LTD · ELLAND · YORKS

In Every Ship of the Royal Navy

QUEEN

Non Allergic

BEAUTY PRODUCTS

THE SAFETY FACTOR IN EVERY DAY MAKE-UP

Queen beauty products form a complete range of toilet and beauty preparations, including lipsticks, specially for those women who have sensitive skins. Queen products contain no orris in any form, nor any other skin irritants AND ARE RECOMMENDED BY THE MEDICAL PROFESSION. Obtainable from John Bell & Croyden, 50 Wigmore Street, W.1, and other chemists.

Write for Price List to :—

BOUTALLS CHEMISTS LTD.

60 Lambs Conduit St., London, W.C.1

ST. ANDREW'S HOSPITAL FOR NERVOUS AND MENTAL DISORDERS
NORTHAMPTON

PRESIDENT: THE EARL SPENCER

MEDICAL SUPERINTENDENT: THOMAS TENNENT, M.D., F.R.C.P., D.P.H., D.P.M.

This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, biochemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Plombières treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-ray Room, an Ultraviolet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for biochemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: Northampton 4354 (3 lines)), who can be seen in London by appointment.

CAMBERWELL HOUSE, 33, Peckham Road, London, S.E.5

Telegrams: "PSYCHOLIA, LONDON"

A PRIVATE HOSPITAL FOR THE TREATMENT OF NERVOUS AND MENTAL DISORDERS

Telephone: RODNEY 4242 (2 lines)

Completely detached Villas for mild cases. Voluntary Patients received. Fifteen acres of grounds. Hard and grass tennis courts, putting greens, Recreation Hall with Badminton Court, and all indoor amusements. Occupational therapy, Calisthenics, Actinotherapy, prolonged immersion baths, shock and all modern forms of treatment. Chapel.

Senior Physician Dr. THOMAS T. BARTLETT, assisted by a resident Medical Staff and visiting Consultants

An Illustrated Prospectus giving fees, which are reasonable, may be obtained upon application to the Secretary

CLIFFDEN, TEIGNMOUTH

For the early treatment of nervous disorders and patients needing rest and care

A well-appointed House with spacious balconies and extensive views of the South Devon Coast. Beautiful garden and own dairy in 35 acres In the same grounds, ROWDENS, a comfortable house with lovely views. Private road to the beach

There is also a charming house, EBWORTHY, MANATON, DARTMOOR, situated in 25 acres, 1100 ft. up for bracing moorland air

Resident Physicians—BERTHA M. MULES, M.D., B.S. ANNE S. MULES, M.R.C.S., L.R.C.P. *Telephones*—TEIGNMOUTH 289 and 537

RUTHIN CASTLE, NORTH WALES

A Private Clinic, the first in Great Britain, for investigation and treatment of all forms of disease, except infectious and mental

Nursing, dietetic, massage, x-ray and laboratory departments — Central heating and a lift to all floors

Inclusive charges — Apply SECRETARY — Telephone: Ruthin 66

MUNDESLEY SANATORIUM
MUNDESLEY, NORFOLK

TERMS FROM 16 GUINEAS WEEKLY (Single Room). Waiting list: 2 weeks
" " 14 " " (Shared Room). Immediate vacancies

Medical Superintendents:

E. C. WYNNE-EDWARDS
M.B.(Cantab.), F.R.C.S.(Edin.)

GEORGE H. DAY
M.D.(Cantab.)

For all information apply THE SECRETARY

Telephone: Mundesley 94 and 95 (2 lines)

SPRINGFIELD HOUSE

Phone: BEDFORD 3417 **Near BEDFORD**

For MENTAL CASES (including the aged)

Fees from Eight Guineas per week

For forms of admission, &c., apply to the Resident Physician, CEDRIC W. BOWER.

INTERVIEWS IN LONDON BY APPOINTMENT.

BOWDEN HOUSE

HARROW-ON-THE-HILL, MIDDLESEX

Established in 1911 Tel.: BYRon 1011 & 4772

(Incorporated Association not carried on for profit)

A private clinic for the treatment of the neuroses and nervous disorders by psychotherapy and all modern physical therapies.

Apply: MEDICAL DIRECTOR

HEIGHAM HALL, NORWICH

PRIVATE MENTAL HOME for Nervous and Mental illness. All types of treatment carried out. Accommodation for Alcoholics and Addicts available. Special Geriatric Unit now open. Fees from 6 gns. per week upwards according to requirements.

Apply to Dr. J. A. SMALL Telephone: Norwich 20080

CHISWICK HOUSE

PINNER, MIDDLESEX

Telephone: PINNER 234

A Private Home for the Treatment and Care of Mental and Nervous Illnesses in both Sexes.

A modern house, 12 miles from Marble Arch, in attractive secluded grounds. Patients treated under Certificate, Temporary or Voluntary status. Modern forms of treatment, including psychotherapy, narco-analysis, modified insulin, occupational therapy, E.C.T., etc. Fees from 12 guineas a week.

DOUGLAS MACAULAY, M.D., D.P.M.

PARK SANATORIUM

(FORMERLY SANATORIUM TURBAN)

DAVOS-PLATZ, SWITZERLAND

First-class house, 5,150 feet above sea-level. Large park and wood belonging to the Sanatorium. Terms for board and residence, including room, medical treatment, etc., from Fcs. 18 per day. Prospectus.

Medical Superintendent, F. CHARLES, M.D.

Vacancies

ACADEMIC AND EDUCATIONAL SECTION — *Page* 31

ANÆSTHETICS
Middlesex, W.1. H.O. 34
Bath H.M.C. Sr. H.O.'s 36
Birmingham United Hosps. Regs. .. 36
Bradford Royal Infy. H.O. 36
Bradford. St. Luke's. H.O... .. 36
Brighton Gen. Sr. H.O. 37
Coventry No. 20 Group H.M.C. Sr. H.O. 37
Dudley, Stourbridge & Dist. Sr. H.O.'s 38
East Fife Hosps. Board. Sr. H.O. .. 38
Glasgow. Royal Infy. Sr. H.O. .. 39
Halifax Gen. Jr. H.M.O. 39
Ipswich. East Suffolk & Ipswich. Sr. H.O. 39
Leeds A Group H.M.C. Sr. H.O. .. 40
Leeds R.H.B. Locum Regs. 40
Leeds R.H.B. Sr. Reg. & Reg. .. 40
Manchester R.H.B. Sr. H.M.O. .. 33
North West Met. R.H.B. Sr. H.M.O. 32
Nottingham City. Sr. H.O. 43
Nottingham Gen. Sr. H.O. or Locum 43
Reading. Royal Berks. Sr. H.O. .. 44
Romford. Rush Green. Sr. H.O. .. 44
Salford H.M.C. Sr. H.O. 44
Sheffield R.H.B. Locum Reg. .. 45
South East Met. R.H.B. P.-t. Cons. 33
South West Met. R.H.B. P.-t. Locum Cons. or Sr. H.M.O. 33
Stoke-on-Trent. City Gen. Sr. H.O. 46
Warrington Infy. Sr. H.O. 47
Welsh R.H.B Cons. 33
Welsh R.H.B. Regs. 47
Wolverhampton Group. Sr. H.O. .. 48

BACTERIOLOGY
Irvine, Ayrshire. Central. Jr. H.M.O. 40

CARDIOLOGY
Manchester United Hosps. Reg. .. 42

CASUALTY
Poplar, E.14. H.O. 34
Prince of Wales's Gen., N.15. Sr. H.O. 34
Queen Mary's Hosp. for the East End, E.15. H.O. 34
Royal Northern, N.7. Sr. H.O. .. 35
St. Charles', W.10. Sr. H.O. 35
St. Nicholas, S.E.18. Sr. H.O. .. 35
Willesden Gen., N.W.10. Sr. H.O. .. 35
Aylesbury. Royal Bucks. Locum Sr. H.O. 35
Blackpool. Victoria. H.O. 36
Brighton. Royal Sussex County. H.O. 37
Chesterfield Royal. Pre-reg. H.O. or Sr. H.O. 37
Chichester. St. Richard's. Sr. H.O. 38
Colchester Group H.M.C. Sr. H.O. (Temp.) 38
Coventry No. 20 Group H.M.C. Jr. H.M.O. 37
Croydon. Mayday. Sr. H.O. & Locum Jr. H.M.O. 37/38
Dudley, Stourbridge & Dist. Sr. H.O.'s 38
Hastings. Royal East Sussex. Sr. H.O. 39
Hitchin Hosps. Sr. H.O. 39
Leamington Spa. Warneford Gen. Sr. H.O. 40
Liverpool, Bootle. Jr. H.M.O. .. 41
Maidstone. West Kent Gen. Sr. H.O. 41
Newport, I.W. St. Mary's. Sr. H.O. 43
Newport, Mon. Royal Gwent. Sr. H.O. 43
Nottingham Gen. Sr. H.O. 43
Plymouth. South Devon & East Cornwall. Sr. H.O... 44
Shotley Bridge Gen. H.O. 46
Southport & Dist. H.M.C. Jr. H.M.O. 47
Swindon Hosp. Group. Sr. H.O. .. 47
Warrington Infy. Jr. H.M.O. .. 47
Wolverhampton Group. H.O. .. 48
York A & Tadcaster H.M.C. Jr. H.M.O. 48

CHEST AND TUBERCULOSIS
North West Met. R.H.B. Sr. H.M.O. 32
North West Met. R.H.B. Sr. Reg. .. 34
Plaistow, E.13. Pre-reg. H.O. .. 34
S.E. Regional Thoracic Surgery Unit, S.E.18. Sr. H.O. 35
Alton. Henry Gauvain. Sr. H.O. .. 35
Bristol. Cossham/Frenchay H.M.C. H.O. 37
Coatbridge, Airdrie & Dist. Hosps. B.O.M. Jr. H.M.O. 37
Colchester Group H.M.C. Sr. H.O. .. 38
Dudley, Stourbridge & Dist. Jr. H.M.O. 38
Market Drayton. Cheshire Joint San. Jr. H.M.O. or Sr. H.O. 42
Newcastle R.H.B. Cons. 32
Newcastle R.H.B. Reg. 43
Oxford R.H.B. Sr. H.M.O. 33
Rochford, Essex. Gen. Sr. H.O. .. 44
Sheffield R.H.B. Cons. 33
Sheffield R.H.B. Sr. Reg. 45
Southampton Chest. Locum Reg. .. 46
Ventnor, I.o.W. Royal Nat. Hosp. for Diseases of the Chest. Jr. H.M.O. & Sr. H.O. 47
York A & Tadcaster H.M.C. Sr. H.O. 48
Newcastle, Co. Dublin. Peamount San. Jr. A.M.O. 48

DENTAL SURGERY
Plymouth. South Devon & East Cornwall. H.O. 44

DERMATOLOGY
Leeds R.H.B. Reg. 40
Liverpool United Hosps. Reg. .. 41
Welsh R.H.B. Reg. 47

EAR, NOSE, AND THROAT
Westminster, S.W.1. Sr. H.O. .. 35
Birmingham & Midland Ear & Throat. Sr. H.O. or H.O. & Pre-reg. H.O. 36
Bournemouth & East Dorset H.M.C. H.O. 36
Carlisle. Cumberland Infy. Sr. H.O. 37
East Cumberland H.M.C. H.O. .. 39
Halifax Royal Infy. H.O. 39
Inverness Hosps. B.O.M. H.O. .. 40
Leeds R.H.B. Regs. 40
Liverpool United Hosps. Locum Reg. 41
Llanelly. Jr. H.M.O. & Sr. H.O. .. 41
Manchester R.H.B. Reg. 42
Mid-Glamorgan H.M.C. H.O. .. 42
Oxford R.H.B. Reg... 43
Reading. Royal Berks. H.O. .. 44

GERIATRICS
South East Met. R.H.B. Sr. H.M.O. 32
Halifax. St. John's. Sr. H.O. .. 39
Manchester R.H.B. Cons. & Sr. H.M.O. 33
Newcastle R.H.B. Locum Sr. Reg. 43
Oxford R.H.B. Cons... 33

HÆMATOLOGY
South African Blood Transfusion Service. Serologist 33

INFECTIOUS DISEASES
Neasden, N.W.10. Locum Reg. .. 34
St. George's, S.W.1. Reg. 35
Birmingham. Little Bromwich. Sr. H.O. 36
Coatbridge, Airdrie & Dist. Hosps. B.O.M. Jr. H.M.O. 37
Leeds R.H.B. Regs. 40

MEDICINE
Acton, W.3. H.O. 34
Bethnal Green, E.2. H.O.'s 34
Brook Gen., S.E.18. H.O. 34
Lambeth, S.E.11. H.O. 34
Princess Beatrice, S.W.5. H.O. .. 34
Royal Free Hosp. Group. P.-t. Cons. 32
St. Charles', W.10. Pre-reg. H.O. .. 35
St. David's, N.18. P.-t. M.O. (G.P.). . 35
St. Stephen's, S.W.10. Sr. H.O. .. 35
Bedford Gen. Pre-reg. H.O... .. 35
Beverley, Yorks. Westwood. Locum Sr. H.O. 35
Birmingham R.H.B. Reg. 36
Bishop Auckland Gen. H.O... .. 36
Blackpool. Victoria. H.O. 36
Bradford. St. Luke's. Sr. H.O. .. 36
Cambridge. Addenbrooke's. H.O.'s.. 37
Chelmsford & Essex. Pre-reg. H.O. 37
Dewsbury. Staincliffe Gen. H.O. .. 38
Doncaster Royal Infy. H.O. .. 38
Dover. Buckland. H.O. 38
Edgware Gen. H.O. 38
Halifax Gen. H.O. 39
Inverness Hosps. B.O.M. H.O.'s .. 40
Ipswich. Borough Gen. Pre-reg. H.O. 39
Leeds R.H.B. Area. H.O.'s 40
Leeds R.H.B. Locum Regs. 40
Lincoln. St. Geprge's. Jr. H.M.O. .. 41
Llwynypia. Rhondda. Sr. H.O.'s .. 41
Manchester R.H.B. Regs. 42
Manchester United Hosps. Sr. H.O. 42
Manchester. Withington. Sr. H.O... 42
Mid-Glamorgan H.M.C. Sr. H.O. & H.O.'s 42
Newcastle R.H.B. Reg. 43
Newton Abbot. Sr. H.O. 44
Nottingham City. H.O. 43
Otley, Yorks. Gen. Jr. H.M.O. or Sr. H.O. 44
Pontypridd. East Glamorgan. Sr. H.O. 44
Portsmouth Group H.M.C. Pre-reg. H.O.'s 44
Rochdale. Birch Hill. H.O.'s .. 44
Romford. Oldchurch. H.O... .. 44
Romford. Victoria. H.O. 44
Ryde, I.W. Royal I.W. County. H.O. 44
Salford Royal. Sr. H.O. 45
Scotland. Northern R.H.B. Sr. H.O. 45
Scunthorpe H.M.C. Locum Sr. H.O. 46
Shotley Bridge Gen. H.O.'s 46
St. Albans City. H.O. 46
Stoke-on-Trent. City Gen. H.O. .. 46
Stoke-on-Trent. North Staffs Royal Infy. H.O. 46
Stroud Gen. Sr. H.O... 46
Tredegar Gen. Jr. H.M.O. 47

(continued overleaf)

Walsall H.M.C. H.O.'s 47
Watford & Dist Peace Mem. H.O. 47
Weston-super-Mare Gen. H.O. .. 47

NEUROLOGY
National Hosps. for Nervous Diseases, W.C.1. Sr. Reg. 34
New York. Albany. Residencies .. 48

NEUROSURGERY
Regional Neurosurgical Centre, S.E.18. Sr. H.O. 35
St. George's, S.W.1. Sr. H.O. 35
Aylesbury. Stoke Mandeville. Jr. H.M.O. 35
Bristol. Cossham/Frenchay H.M.C. Sr. H.O. 37
Manchester R.H.B. Reg. 42
Romford. Oldchurch, Sr. H.O. .. 44

OBSTETRICS AND GYNÆCOLOGY
Elizabeth Garrett Anderson, N.W.1. H.O. 34
Dulwich, S.E.22. Sr. H.O. 34
St. Giles', S.E.5. Sr. H.O. 35
Bury & Rossendale H.M.C. Sr. H.O. 37
Carlisle. Cumberland Infy. H.O. .. 37
Colchester Group H.M.C. H.O. .. 38
East Fife Hosps. B.O.M. Reg. .. 38
Grimsby Gen. Sr. H.O. or Locum .. 39
Hillingdon, Middx. H.O. 39
Huddersfield H.M.C. H.O. 39
Inverness Hosps. B.O.M. H.O. .. 40
Leeds R.H.B. Area. H.O.'s 40
Manchester R.H.B. Reg. 42
Mid-Glamorgan H.M.C. H.O.'s .. 42
Newcastle United Hosps. Sr. H.O... 42
Paisley. Barshaw & Thornhill Maternity Hosps. H.O.'s.. 44
Rochdale. Birch Hill. Sr. H.O. & H.O. 44
Sheffield R.H.B. Locum Sr. Reg. .. 45
Sheffield United Hosps. Sr. H.O. .. 45
Shotley Bridge Gen. H.O. 46
Southend Gen. H.O... 47
Stoke-on-Trent. North Staffs Royal Infy. Sr. H.O. or H.O. 46
Welsh R.H.B. Sr. Reg. & Reg. .. 47
Wolverhampton Group. Sr. H.O. .. 48
Yorkshire. East Riding H.M.C. Sr. H.O. 48

OPHTHALMOLOGY
Coventry No. 20 Group H.M.C. Jr. H.M.O. & H.O. 37
Derby. Derbyshire Royal Infy. Reg. 38
Manchester Royal Eye. Sr. H.O. .. 41
Manchester United Hosps. Reg. .. 42
Newcastle R.H.B. Sr. Reg. 43
Nottingham & Midland Eye Infy. Sr. H.O. 43
Sheffield R.H.B. P.-t. Cons... .. 33
Sheffield United Hosps. Reg... .. 45
Wolverhampton Group. P.-t. Clin. Asst. 48

ORTHOPÆDICS
St. Giles', S.E.5. H.O. 35
Ascot. Heatherwood Orthopædic. Locum Reg. 35
Bath H.M.C. Sr. H.O. or H.O. .. 36
Bath. St. Martin's. H.O. 36
Bedford Gen. Reg. & Locum Reg. .. 35
Blackpool. Victoria. Sr. H.O. .. 36
Bury & Rossendale H.M.C. Sr. H.O. 37
East Cumberland H.M.C. Sr. H.O. .. 39
Glasgow. Royal Infy. Sr. H.O. .. 38
Grimsby Gen. Sr. H.O. 39
Ilford. King George. Sr. H.O. .. 39
Inverness Hosps. B.O.M. H.O.'s .. 40
Ipswich. East Suffolk & Ipswich. Sr. H.O. & H.O. 39
Leeds R.H.B. Area. H.O.'s 40
Leeds R.H.B. Regs. 40
Leeds. Woodlands (Orthopædic). Sr. H.O. 41
Mansfield. Harlow Wood Orthopædic. Reg. 41
Mid-Glamorgan H.M.C. H.O. .. 42
Nottingham Gen. Sr. H.O. or Locum 43
Oxford United Hosps. & R.H.B. Sr. Reg. 44
Portsmouth Group H.M.C. Sr. H.O. 44
Romford. Oldchurch. H.O. 44
Salisbury Gen. Reg. 45
Sheffield R.H.B. Locum Regs. .. 45
Sheffield United Hosps. Sr. Reg. .. 45
Southampton. Royal South Hants. Sr. H.O. 46
Stoke-on-Trent. North Staffs Royal Infy. Sr. H.O. 46
Welsh R.H.B. Regs. 47
Winchester. Royal Hants County. Sr. H.O. 47
Wolverhampton Group. Sr. H.O. or H.O. 48
Yorkshire. East Riding H.M.C. H.O. 48

PÆDIATRICS
Queen Elizabeth Hosp. for Child. M.C. H.O. 34
Queen Mary's Hosp. for the East End, E.15. H.O. 34
Birmingham United Hosps. Sr. H.O. 36
Bolton Dist. Gen. Sr. H.O. 36
Brentwood. High Wood Hosp. for Child. Temp. Reg... 37
Chelmsford. St. John's. H.O. .. 37
Hillingdon, Middx. H.O. 39
Leeds R.H.B. Area. H.O.'s 40
Manchester. Duchess of York Hosp. for Babies. Sr. H.O. & H.O. .. 41
Manchester R.H.B. Reg. 42
Manchester. West Manchester H.M.C. Sr. H.O. 42
Mid-Glamorgan H.M.C. Sr. H.O. .. 42
Salford. Hope. Sr. H.O. 45
Salisbury Gen. H.O... 45
Southampton Child's. H.O. 46
Stoke-on-Trent. City Gen. Sr. H.O. & H.O. 46
Wolverhampton Group. H.O. .. 48
Belfast. Royal Belfast Hosp. for Sick Child. Sr. H.O. & H.O.'s 48

PATHOLOGY
South East Met. R.H.B. Sr. H.M.O. 32
Glasgow Royal Infy. Sr. H.O.'s .. 39
Manchester. Withington. Sr. H.O.'s 42
North West Met. R.H.B. Cons. .. 32
Scotland. Western R.H.B. Sr. H.M.O. 33
Scotland. Western R.H.B. Sr. Reg. 45
Shrewsbury. Royal Salop Infy./ Copthorne. Sr. H.O. 45
West Bromwich. Hallam. Sr. H.O... 47
Woking & Chertsey Group H.M.C. Reg. 48
Yorkshire. East Riding H.M.C. Sr. H.O. 48

PLASTIC SURGERY
Chepstow. St. Lawrence. Sr. H.O. .. 37

PSYCHIATRY
Bethlem Royal, Maudsley & Cane Hill Hosps. Sr. Reg. 34
North West Met. R.H.B. P.-t. Sr. H.M.O.'s 32
St. Clement's, E.3. Sr. H.O. .. 35
Birmingham. Highcroft Hall Mental. Jr. H.M.O. 36
Birmingham R.H.B. Cons. 32
Birmingham R.H.B. Reg. 36
Chesterfield H.M.C. Jr. H.M.O. .. 37
Lancaster Moor. Jr. H.M.O... .. 41
Leeds R.H.B. Locum Regs. 40
Leeds R.H.B. Sr. Reg. 40
Lichfield. St. Matthew's. Jr. H.M.O. 41
Lincoln. Bracebridge Heath. Jr. H.M.O. 41
Liverpool United Hosps. Reg. .. 41
Manchester United Hosps. Sr. Reg... 42
Newcastle R.H.B. Cons., Sr. H.M.O. & Locum Sr. H.M.O.'s 32
Newcastle R.H.B. Sr. Reg., Regs., Locum Sr. Reg. & Regs. 43
Northampton. St. Crispin. Sr. H.O. 42
Oxford R.H.B. Cons... 33
Sheffield R.H.B. Cons. 33
Sheffield R.H.B. Regs. 45
St. Albans. Shenley. Sr. H.O. & Sr. Reg. 46/47
Warwick Central Mental. Sr. H.O... 47
Welsh R.H.B. Reg. 47
Welsh R.H.B. Sr. H.M.O.'s 33
Yorkshire. East Riding H.M.C. H.O. 48
Ireland. St. John of God Private Psychiatric. Cons... 33

RADIOLOGY
Manchester United Hosps. Sr. H.M.O. 32
Scotland. North-Eastern R.H.B. Sr. H.M.O. 33
Scotland. Northern R.H.B. Sr. Reg. 45
Sheffield United Hosps. & R.H.B. Cons. 33
South East Met. R.H.B. Sr. H.M.O. 33
Northern Ireland Hosps. Auth. Cons. 34

RADIOTHERAPY
Southampton. Royal South Hants. Reg. 46

RHEUMATOLOGY
Bath. Royal Nat. Hosp. for Rheumatic Diseases. Sr. H.O... .. 36

SURGERY
Bolingbroke, S.W.11. H.O. 34
German, E.8. H.O. 34
King Edward Mem., W. H.O. .. 34
Memorial, S.E.18. H.O.'s 34
Poplar, E.14. H.O. 34
Queen Mary's Hosp. for the East End, E.15. Pre-reg. H.O. 34
Royal Cancer, S.W.3. H.O.'s .. 34
St. Mary Abbots, W.8. Reg. 35
Aberystwyth Gen. Pre-reg. H.O. .. 35
Arbroath Infy. H.O.'s 35
Bedford Gen. Pre-reg. H.O. 35
Bexhill, Sussex. H.O.'s 36
Birmingham Accident. Cons. .. 32
Birmingham R.H.B .Reg. 36
Birmingham. Solihull. Pre-reg. H.O. 36
Bishop Auckland Gen. H.O... .. 36
Blackpool. Victoria. H.O. 36
Bournemouth. Royal Victoria. H.O. 36
Brighton Gen. H.O. 37
Brighton. Royal Sussex County. Pre-reg. H.O. 37
Bromsgrove. All Saints'. Locum H.O. 37
Burton-on-Trent Gen. Infy. H.O. .. 37
Cambridge. Addenbrooke's. H.O. .. 37
Carlisle. Cumberland Infy. Sr. H.O. 37
Chelmsford & Essex. Pre-reg. H.O... 37
Colchester Group H.M.C. Sr. H.O. & H.O.'s 38
Coventry No. 20 Group H.M.C. Sr. H.O. 37
Darlington Mem. H.O. 38
Derby. Derbyshire Child's. Pre-reg. H.O. or Sr. H.O. 38
Doncaster Royal Infy. Reg. & H.O... 38
Dorking Gen. Sr. H.O. 38
Dover. Royal Victoria. Sr. H.O. .. 38
Driffield. East Riding Gen. Locum Sr. H.O. 38
Dudley, Stourbridge & Dist. Pre-reg. H.O.'s 38
Exeter. Royal Devon & Exeter. Sr. H.O. 38
Grantham & Kesteven Gen. Reg. .. 39
Grimsby Gen. Pre-reg. H.O. or Sr. H.O. 39
Halifax. Royal Infy. Sr. H.O. .. 39
Hertford County. Pre-reg. H.O. .. 39
Hove Gen. H.O. 39
Hull. Kingston Gen. Sr. H.O. & H.O. 39
Ilford. King George. H.O.'s.. .. 39
Inverness Hosps. B.O.M. H.O.'s .. 39
Leeds R.H.B. Area. H.O.'s 40
Leeds R.H.B. Reg. & Locum Regs. 40
Leeds United Hosps. Reg. 41
Lincoln County. Sr. H.O. 41
Llanelly. Jr. H.M.O.'s 41
Lowestoft & North Suffolk. Sr. H.O. 41
Luton & Dunstable. H.O. 41
Maidstone. West Kent Gen. Pre-reg. H.O. 41
Manchester R.H.B. Regs. .. 41/42
Manchester. West Manchester H.M.C. H.O. 42
Manchester. Withington. Sr. H.O... 42
Mexborough. Montagu. Reg. .. 42
Mid-Glamorgan H.M.C. H.O.'s .. 42
Newmarket Gen. H.O. 43
Nottingham. Child's. H.O. 43
Nottingham Gen. Sr. H.O. & H.O.'s 43
Paisley. Royal Alexandra Infy. H.O.'s 44
Peterborough Mem. H.O. 44
Plymouth. South Devon & East Cornwall. Sr. H.O... 44
Pontypool & Dist. Jr. H.M.O. .. 44
Romford. Victoria. H.O. 44
Salford. Hope. Sr. H.O. 45
Salisbury Gen. H.O. 45
Scunthorpe War Mem. Sr. H.O. .. 46
Sheffield R.H.B. Locum Reg. .. 45
Sheffield R.H.B. Sr. Reg. 45
Sheffield United Hosps. Reg. 45
Shotley Bridge Gen. H.O.'s 46
Shrewsbury. Royal Salop Infy. H.O. 45
Southampton Gen. H.O.'s 46
Southport & Dist. H.M.C. Sr. H.O... 47
Stafford. Staffordshire Gen. Infy. H.O. 45
St. Albans City. H.O. 46
Stoke-on-Trent. City Gen. H.O. .. 46
Stoke-on-Trent. North Staffs Royal Infy. H.O. 46
Stroud Gen. Sr. H.O... 46
Swansea. Sr. H.O. 47
Tredegar Gen. H.O. 47
Walsall H.M.C. H.O.'s 47
Warrington Gen. H.O. 47
Welsh R.H.B. Regs. 47
Weston-super-Mare Gen. H.O. .. 47
Whitehaven. Cumberland. Sr. H.O. 48
Windsor. King Edward VII. Reg. .. 47
Wolverhampton Group. H.O.'s .. 48
Workington Infy. Pre-reg. H.O. or Sr. H.O. 48
York A & Tadcaster H.M.C. Sr. H.O. 48
Yorkshire. East Riding H.M.C. H.O.'s 48
Dublin. Jervis Street Hosp. Reg... 48

UROLOGY
St. Peter's, St. Paul's & St. Philip's Hosps. & Inst. of Urology. Reg. .. 35
Leeds United Hosps. Sr. H.O. or Pre-reg. H.O. 41
Newcastle Gen. Sr. H.O. 43

GENERAL
B.W.I. University College Hosp. H.O.'s 48

PUBLIC APPOINTMENTS 48

GENERAL PRACTICE 50

MISCELLANEOUS 50

Academic and Educational

THE ROYAL SOCIETY

LOCKE RESEARCH FELLOWSHIP

Applications are invited by the Council of the Royal Society for the Locke Research Fellowship, tenable at any place approved by the Council of the Royal Society, for research in the general field of experimental physiology and pharmacology. Candidates should supply the usual personal details and give the names of 2 referees. Testimonials will not be considered. Applicants and referees at a distance may write direct to the address given below, without first obtaining forms. The subject of the proposed research and the place at which it would be carried out, together with the name of the Head of the Department, should be given.

The appointment will be for 2 years in the first instance, from 1st January, 1955, and may be renewed annually for such periods as Council may determine. The successful applicant may only undertake any other work concurrently with the Fellowship upon obtaining the written consent of the President and Council of the Royal Society. The stipend will be £1250 p.a., with superannuation benefits to which the successful candidate will be required to contribute 5% of annual stipend and to which the Society will make a contribution equal to 10% of the stipend.

Application should be made on forms to be obtained from the Assistant Secretary, the Royal Society, Burlington House, London, W.1, and should be received as early as possible, in any case not later than 1st October, 1954.

UNIVERSITY OF LONDON

A LECTURE on "Some Problems in Cellular Biology as studied with the Electron Microscope" will be given by Prof. E. DEMPSEY (Washington University, St. Louis) at 5.30 P.M. on 8TH JULY at St. Mary's Hospital Medical School (Wright-Fleming Institute Lecture Theatre), Norfolk-place, Paddington, W.2.

Admission free, without ticket.

JAMES HENDERSON, Academic Registrar.

THE UNIVERSITY OF SHEFFIELD

COURSES OF INSTRUCTION for the DIPLOMA IN MEDICAL DIAGNOSTIC RADIOLOGY (D.M.R.D.) AND THERAPEUTIC RADIOLOGY (D.M.R.T.) will commence in OCTOBER, 1954. The Courses will cover a period of 2 years of whole-time study, and the fee for each course is 50 guineas.

Applications to attend should be sent to the Dean of the Faculty of Medicine, The University, Sheffield, 10.

EDINBURGH POST-GRADUATE BOARD FOR MEDICINE

GENERAL SURGERY

3 months courses of post-graduate surgery are arranged to start on 27TH SEPTEMBER, 1954, and 21ST MARCH, 1955. These are suitable for surgeons requiring refresher courses in the current outlook on general surgery, or for graduates preparing to specialise in surgery; approximately 275 hours of instruction are provided. Fee £31 10s.

INTERNAL MEDICINE

Courses lasting 12 weeks, suitable for graduates wishing a refresher course, or to specialise in medicine, begin on 27TH SEPTEMBER, 1954, and 28TH MARCH, 1955. These courses consist of 320 hours instruction, comprising lectures, clinical demonstrations and ward visits. Fee £31 10s.

Additional instruction in clinical pædiatrics is arranged in conjunction with the course in medicine, for which there is a small fee; the numbers are limited.

Applications for enrolment should be addressed to the Director of Post-Graduate Studies, Surgeons' Hall, Edinburgh, 8, supplying particulars of qualifications and post-graduate experience.

THE MILROY LECTURES ON STATE MEDICINE AND PUBLIC HEALTH

The Council of the Royal College of Physicians of London are prepared to receive applications for the office of MILROY LECTURER for 1956.

Applications must be addressed to the Registrar, Royal College of Physicians, Pall Mall East, S.W.1, to reach the College on or before WEDNESDAY, 8TH SEPTEMBER, 1954, and to include a short synopsis of the subject selected by the candidate.

2 Lectures are to be given on a Tuesday and Thursday in February or March, 1956.

A copy of Dr. Milroy's "Suggestions" on the subject of his bequest, and information as to the emolument, may be obtained from the Registrar.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

DEPARTMENT OF PHARMACOLOGY. Applications are invited for a SENIOR LECTURESHIP. Salary £1100–£100–£1500 according to qualification; F.S.S.U.; to start in October, 1954.

Applications (3 copies), stating date of birth, qualifications and experience, with names of 2 referees, to Prof. W. D. M. PATON, Department of Pharmacology, Examination Hall, Queen-square, London, W.C.1, not later than 21st July.

LONDON SCHOOL OF HYGIENE AND TROPICAL

MEDICINE. (UNIVERSITY OF LONDON.) Applications are invited for the post of SENIOR LECTURER in the Department of Clinical Tropical Medicine. Tropical experience and possession of M.R.C.P. (Lond.) essential. The post will include both teaching duties at the School and clinical work at the Hospital for Tropical Diseases where the chosen candidate will be offered an honorary contract by the Board of Governors of University College Hospital. Salary scale £1250–£100–£1750, the point of entry to depend on experience and status.

Applications must be received by the Dean, London School of Hygiene and Tropical Medicine, Keppel-street (Gower-street), London, W.C.1, not later than 1st September, 1954.

THE WELSH NATIONAL SCHOOL OF MEDICINE.

(UNIVERSITY OF WALES.) SENIOR LECTURER IN MEDICINE. Applications are invited for the post of Senior Lecturer in the Medical Unit. The person appointed will be required to assist in all the work of the Professorial Department of Medicine as directed by the Professor, and to take charge of hospital medical patients in his absence. The Unit has 40 Beds and good laboratory accommodation. The post is full-time and the salary will be within the scale which is at present £1500–£100–£2000 p.a. Schemes of superannuation and family allowances apply to the appointment.

Further particulars may be obtained from the undersigned by whom applications should be received not later than 24th July, 1954.

34, Newport-road, Cardiff. F. DODSWORTH, Secretary.

THE UNIVERSITY OF MANCHESTER.

Applications are invited for the post of LECTURER or ASSISTANT LECTURER IN PATHOLOGY. The holder of this post will be attached to the Rheumatism Research Centre, and should have a special interest in the connective tissues. He will also have teaching and other general duties in the Department of Pathology. Salary scales: Lecturer £700–£100–£1800 p.a., Assistant Lecturer £700–£100–£1000 p.a. Status and initial salary according to qualifications and experience. Membership of the F.S.S.U. and Children's Allowance Scheme.

Applications should be sent not later than 31st July, 1954, to the Registrar, the University, Manchester, 13, from whom further particulars and forms of application may be obtained.

THE UNIVERSITY OF SHEFFIELD.

Applications are invited for the temporary post of SENIOR LECTURER in the Department of Social and Industrial Medicine for the period 1st October, 1954–1st September, 1955, at a salary in the range £1200–£1400, depending on qualifications and experience. The successful candidate will be expected to take an active part in the social medicine teaching programme and to participate in research. There is also a possibility of clinical duties for a suitably qualified person.

Applications, giving full details of previous experience, and the names of 2 referees, should be sent to the Registrar by 24th July, 1954.

UNIVERSITY OF OXFORD.

Applications are invited for the post of GRADUATE ASSISTANT IN HÆMATOLOGY in the Department of Pathology, Radcliffe Infirmary. The salary will be in the scale of £850, rising by annual increments of £50 to £1300. The initial stipend will be fixed with reference to age and experience. Previous experience in hæmatology is required. The successful applicant will be required to become a member of the F.S.S.U. unless already a member of some other approved scheme.

Applications (1 copy), with the names of 2 referees, should reach Dr. R. G. MACFARLANE, Department of Pathology, Radcliffe Infirmary, Oxford, not later than 1st September, 1954. The person appointed will be required to take up office on 1st October, 1954, or as soon as possible thereafter.

UNIVERSITY COLLEGE, Ibadan, Nigeria.

Applications are invited for the following posts in the Faculty of Medicine.

Clinical Departments:

Biochemistry: SENIOR LECTURER in charge of Department.
Radiology: SENIOR LECTURER.

Pre-Clinical Departments:

Anatomy: SENIOR LECTURER.
LECTURER.
Pharmacology: SENIOR LECTURER or LECTURER.
Physiology: LECTURER.

Salary scales:

Clinical Departments:

Senior Lecturer in charge of Department up to £2500 p.a.
Senior Lecturer £1500–£100–£2000 p.a.

Pre-Clinical Departments:

Senior Lecturer £1400–£100–£1800 p.a.
Lecturer £700–£100–£1300 p.a.

In addition £100 p.a. is payable in all grades pending outcome of revision of salary scales. Point of entry on scales according to qualifications and experience. F.S.S.U. Family allowance £50 p.a. per child (maximum £150 p.a.) for children resident in Nigeria, or £100 p.a. per child (maximum £300 p.a.) for children resident elsewhere. Outfit allowance £60 on appointment. Passages paid for member of staff and wife and assisted passages for children on appointment, termination and annual leave. Part furnished residential accommodation at rent of not more than 7.7% of salary.

Applications (12 copies), naming 3 referees, and detailing full qualifications and experience, to be received by 3rd August, 1954, by the Secretary, Senate Committee on Higher Education in the Colonies, University of London, Senate House, W.C.1, from whom further particulars may be obtained.

UNIVERSITY COLLEGE, Ibadan, Nigeria.

Applications are invited for:—

(1) CHAIR OF PATHOLOGY.
(2) CHAIR OF BACTERIOLOGY.

Salary scale £2250–£100–£2750 p.a., plus £100 p.a. temporary increase pending outcome of present salary review. F.S.S.U. Family allowance £50 p.a. per child (maximum £150 p.a.) for children resident in Nigeria, or £100 p.a. per child (maximum £300 p.a.) for children resident elsewhere. Outfit allowance £60 on first appointment. Passages paid for member of staff and wife and assisted passages for children on appointment, termination and annual leave. Part furnished residential accommodation at rent of not more than 7.7% of salary.

Applications (12 copies), naming 3 referees, and detailing full qualifications and experience, to be received by 3rd August, 1954, by the Secretary, Senate Committee for Higher Education in the Colonies, University of London, Senate House, London, W.C.1, from whom further information may be obtained.

UNIVERSITY OF MELBOURNE, Australia. Applications are invited for the position of PROFESSOR OF SURGERY. The salary will be £A3500 p.a. with superannuation similar to F.S.S.U.

Further particulars and information as to the method of application may be obtained from the Secretary, Association of Universities of the British Commonwealth, 5, Gordon-square, London, W.C.1. The closing date for the receipt of applications, in Australia and London, is 15th October, 1954.

"Testing the Very Young," a Course of Lectures, and Demonstrations for Medical Officers and others desirous of using the Griffiths Mental Development Scale will be held from 18th to 23rd July.—Full particulars: The Course Secretary, 47, Hollycroft-avenue, London, N.W.3 (HAM 4104).

Hospital Services : Senior Appointments

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) MEDICAL DIRECTOR, Mass X-ray Unit 5B, Paddington General Hospital, 285, Harrow-road, W.9, to take charge initially of 1 unit working in the London area and possibly second unit later. Duties include sessional work at Willesden Chest Clinic. Experience in chest diseases essential. Salary £1500 (at age 32)–£1950.

Applications by 29th July, 1954.

(2) CONSULTANT PATHOLOGIST (whole-time or maximum sessions), West Middlesex Hospital, Isleworth, Middx. (1143 Beds). Good experience in bacteriology and hæmatology essential.

Applications by 6th August, 1954.

(3) ASSISTANT ANÆSTHETIST at West Herts Hospital, Hemel Hempstead, Herts. (167 Beds). Salary £1500 (at age 32)–£1950.

Applications by 12th August, 1954.

(4) ASSISTANT PSYCHIATRIST (1 half-day a week), Royal Northern Hospital, Holloway, N.7. Salary £1500 (at age 32)–£1950.

Applications by 10th August, 1954.

(5) PSYCHIATRIST (Senior Hospital Medical Officer) (4 half-days a week), Child Guidance Clinic, Brondesbury Villas, Kilburn, N.W.6. Clinic may be visited by appointment with Area Medical Officer, 215, Chevening-road, N.W.6.

Applications by 17th August, 1954.

Hospitals may be visited by direct appointment.

Application forms obtainable from and returnable to Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

ROYAL FREE HOSPITAL GROUP. Applications are invited for the post of ASSISTANT PHYSICIAN (Consultant, part-time) to work at The Royal Free and Hampstead General Hospitals. Duties to commence on 1st November, 1954.

Applications, stating age and experience, together with the names of 3 referees, should be forwarded to the Secretary to the Board of Governors, The Royal Free Hospital, Gray's Inn-road, W.C.1, not later than 13th August, 1954.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited to fill a vacancy for a Whole-time ASSISTANT PATHOLOGIST to the Greenwich and Deptford Group of hospitals. Candidates must have had general experience in pathology and possession of a higher qualification is desirable. Salary within the scale £1500–£50–£1950.

Apply, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 17th July, 1954.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited to fill a vacancy for a Whole-time ASSISTANT PHYSICIAN for the Geriatric Services and Long-stay Sick in the Camberwell Group of hospitals, for duties mainly at St. Francis Hospital, Constance-road, East Dulwich, S.E.22, where there are 358 Beds for chronic sick. Salary within the scale £1500–£50–£1950.

Apply, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 17th July, 1954.

BIRMINGHAM ACCIDENT HOSPITAL. (215 Beds.) Whole-time CONSULTANT in General Surgery. Higher qualification and wide experience general surgery and orthopædics required. Experience plastic- and neuro-surgery an advantage. Successful candidate to be a member of a Consultant team. Hospital exclusively concerned in treatment of all types of acute injury (50,000 cases annually).

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments and details of 3 referees, to Secretary, Birmingham Regional Hospital Board, 10, Augustus-road, Birmingham, 15, before 19th July, 1954.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Lea COLONY, BROMSGROVE (234 Beds); LEA CASTLE COLONY, KIDDERMINSTER (167 Beds). Whole-time CONSULTANT PSYCHIATRIST AND DEPUTY MEDICAL SUPERINTENDENT. D.P.M. or higher qualification an advantage. Wide experience specialty required. Accommodation available Lea Colony.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments and details of 3 referees, to Secretary, Birmingham Regional Hospital Board, 110, Augustus-road, Birmingham, 15, before 19th July, 1954.

NEWCASTLE REGIONAL HOSPITAL BOARD.

Winterton Hospital, Sedgefield (2030 Beds)

Locum Tenens PSYCHIATRIST (Senior Hospital Medical Officer) required for the above Hospital for at least 2 months. Single accommodation available. Salary 31½ guineas per week.

Cherry Knowle Hospital, Ryhope, Sunderland (810 Beds)

Locum Tenens PSYCHIATRIST (Senior Hospital Medical Officer) required for the above Hospital for at least 2 months. Accommodation available. Salary 31½ guineas per week.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Regional Psychiatrist, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 7 days.

NEWCASTLE REGIONAL HOSPITAL BOARD.

Hexham and District Hospital Management Committee, Barrasford Sanatorium, near Hexham (95 Beds)

PHYSICIAN-SUPERINTENDENT (Consultant), whole-time appointment. The appointee will be responsible for the medical administration of the above Sanatorium and he will also be required to undertake 5 sessions per week at the Newcastle (West) Chest Clinic and possibly another hospital. The appointee will be required to reside at the Sanatorium, where a house is available. Canvassing will disqualify, but candidates are free to visit the Sanatorium by arrangement with the present Medical Superintendent, from whom further particulars may be obtained.

South West Durham Hospital Management Committee, Holywood Hall Sanatorium, Wolsingham, Co. Durham (180 Beds)

PHYSICIAN-SUPERINTENDENT (Consultant), whole-time appointment. The appointee will be responsible for the medical administration of the above Sanatorium and he will also be in charge of the Bishop Auckland Chest Clinic. He will be required to reside at the Sanatorium, where a house is available. The appointee will also be the Consultant Chest Physician to Horn Hall Sanatorium (40 Beds) and Leazes Sanatorium (30 Beds); each hospital having its own Medical Officer. Canvassing will disqualify, but candidates are free to visit the Sanatorium by arrangement with the Secretary of the Hospital Management Committee, General Hospital, Bishop Auckland.

St. George's Hospital, Morpeth (1210 Beds)

CONSULTANT PSYCHIATRIST AND DEPUTY MEDICAL SUPERINTENDENT (whole-time), resident, required at the above Hospital. This Hospital serves the County Borough of Tynemouth and part of the County of Northumberland, also the Municipal Borough of Whitley Bay (population 397,000). The medical staff of the Hospital hold outpatient clinics at the Berwick Infirmary, Morpeth Cottage Hospital, Tynemouth Victoria Jubilee Infirmary and St. Thomas's Clinic, Newcastle. They make regular visits to the section 20 unit at Preston Hospital, North Shields, and provide a general Domiciliary Consultant Service and a Psychiatric Consultant Service for the general hospitals in the admittance area. Applicants must have had wide experience of intramural and extramural psychiatry and be competent to take clinical charge, subject to the general administrative control of the Medical Superintendent, of a section of the Hospital and to participate in the work of the associated outpatient clinics and Domiciliary Consultant Service in the area served by the Hospital. He must be prepared to visit the associated general hospitals as required and, if necessary, undertake the treatment of suitable cases in the general wards. A suitable house is available. Appointment subject to National Health Service (Superannuation) Regulations, 1950. Candidates may visit the Hospital by arrangement with the Medical Superintendent, from whom further information may be obtained.

Salaries in accordance with national terms and conditions of service.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to: (1) Senior Administrative Medical Officer (for Physician-Superintendent posts); (2) Regional Psychiatrist (for Consultant Psychiatrist); "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 28 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. Special AREA FOR CUMBERLAND AND NORTH WESTMORLAND. GARLANDS HOSPITAL, CARLISLE. Whole-time RESIDENT ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer grade). Candidates should normally hold a Diploma in Psychological Medicine, but applications will be considered from candidates with no previous practical experience in psychiatry who hold a higher medical qualification, have had wide experience in general medicine, including Senior Registrar posts, and intend to obtain a Diploma in Psychological Medicine, and specialise in psychiatry. Arrangements can be made for the person appointed to take the necessary courses of study for the Durham Diploma in Psychological Medicine. A small semi-detached house is available. The appointment will be in accordance with the national terms and conditions of service. Canvassing will disqualify, but candidates are free to visit the Hospital by arrangement with the Medical Superintendent, from whom further particulars may be obtained.

Applications, together with names and addresses of referees (preferably) or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, 1, Lonsdale-street, Carlisle, within 28 days.

MANCHESTER. UNITED MANCHESTER HOSPITALS; MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. Whole-time ASSISTANT RADIOLOGIST, to commence as soon as possible. Duties will be divided between Manchester Royal Infirmary and St. Mary's Hospitals for Women and Children, Manchester, under the direction of the Consultant Radiologists. Candidates must possess the D.M.R.D. and must have had wide experience in radiology. Senior Hospital Medical Officer grade.

Applications to be made on forms obtainable from the undersigned and to be returned not later than 14th July, 1954.

F. J. CABLE, Secretary to the Board of Governors.

MANCHESTER REGIONAL HOSPITAL BOARD.

(*a*) Whole-time CONSULTANT PHYSICIAN (geriatrics) to the Oldham and District Hospital Centre (Oldham District General Hospital, &c.). Higher qualifications essential and candidates must have special interest and experience in the treatment and rehabilitation of the chronic sick. Appointee will be required to undertake the domiciliary investigation of patients and establish close liaison with general practitioners and local health authorities. 23rd July, 1954.

(*b*) Whole-time NON-RESIDENT ASSISTANT PHYSICIAN in Geriatrics (Senior Hospital Medical Officer) to the Burnley and District Hospital Centre (226 chronic sick beds, Burnley General Hospital). Appointee will work under general supervision of Consultant Physicians and will be required to undertake the domiciliary investigation of patients and to establish close liaison with general practitioners and the local health authorities. Good experience in general medicine and previous experience in care of chronic sick desirable. Appointee to live in area. 26th July, 1954.

(*c*) Whole-time NON-RESIDENT ASSISTANT ANÆSTHETIST (Senior Hospital Medical Officer) to the Preston and Chorley Hospitals (Preston Royal Infirmary, Sharoe Green Hospital, Preston, and Chorley Hospital). Successful candidate will work under general guidance of Consultants. 19th July, 1954.

Application forms, from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by dates stated.

OXFORD REGIONAL HOSPITAL BOARD. Applications are invited for the post of CONSULTANT PSYCHIATRIST to the Pewsey Mental Deficiency Hospital and its ancillary premises (960 Beds). The post will be whole-time or maximum part-time at the option of the successful candidate who will be required to reside in Pewsey. Residential accommodation is available. Candidates must hold the D.P.M. or equivalent, and be familiar with the statutory responsibilities prescribed by the M.D. Acts and Regulations. Candidates are invited to visit the hospitals by arrangement with the Secretary, Pewsey Hospital, Marlborough, Wilts.

Applications (12 copies), stating age, qualifications, experience, and names of 3 referees, to the Secretary, Oxford Regional Hospital Board, 43, Banbury-road, Oxford (from whom further details can be obtained), to reach him by 30th July.

OXFORD REGIONAL HOSPITAL BOARD. Applications are invited for the post of ASSISTANT CHEST PHYSICIAN (Senior Hospital Medical Officer) to the Area Department of Diseases of the Chest, Reading area, for duty mainly in the Reading County Borough area clinics. Candidates, preferably with Senior Registrar experience, should hold a higher medical qualification.

Applications (15 copies), stating age, qualifications, experience, and names and addresses of 3 referees, to the Secretary, Oxford Regional Hospital Board, 43, Banbury-road, Oxford (from whom further details may be obtained), by 30th July.

OXFORD REGIONAL HOSPITAL BOARD. Applications are invited for the post of Full-time CONSULTANT PHYSICIAN in Geriatrics in the hospitals of the Northampton/Kettering area. Candidates must be sound general Physicians with experience of geriatrics and social problems. The successful candidate will be required to reside in the area.

Applications (12 copies), stating age, qualifications and experience, with the names of 3 referees, to reach the Secretary, Oxford Regional Hospital Board, 43, Banbury-road, Oxford (from whom full details of the post may be obtained), by 30th July, 1954.

SCOTLAND. NORTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of ASSISTANT DIAGNOSTIC RADIOLOGIST on the staff of the Aberdeen General Hospitals. Candidates should have experience in their specialty and hold a Diploma in Radiology. The salary is on the scale £1500–£1950 and the terms and conditions of service for hospital medical and dental officers under the National Health Act (Scotland) will apply to the post.

Applications, together with the names and addresses of 2 referees, should be forwarded by 17th July, 1954, to the Secretary, 1, Albyn-place, Aberdeen, from whom further particulars may be obtained.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time ASSISTANT PATHOLOGIST based at Glasgow Royal Infirmary with particular responsibilities in relation to the Blood Transfusion Service. Salary on the scale £1500–£50–£1950. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time CONSULTANT CHEST PHYSICIAN required for the Leicester Chest Service, with good experience of general medicine. Mainly clinic work with charge of beds at Leicester Isolation Hospital and Chest Unit, Groby-road, Leicester.

Application forms and further details obtainable from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 31st July, 1954.

SHEFFIELD REGIONAL HOSPITAL BOARD. 2 Consultant OPHTHALMOLOGISTS, each for 6 notional half-days per week. Main duties at the Leicester Royal Infirmary. Other duties will include attendance at the Leicester County Borough School Clinic.

Application form and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 24th July, 1954.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time CONSULTANT PSYCHIATRIST for Mapperley Hospital, Nottingham.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 31st July, 1954.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS AND SHEFFIELD REGIONAL HOSPITAL BOARD. Applications are invited for the post of CONSULTANT RADIOLOGIST. This joint appointment may be held on a whole-time or maximum part-time basis but in either case 6 notional half-days will be in The United Sheffield Hospitals. The remaining sessions will be in the Rotherham Group of hospitals. Wide experience in the specialty is necessary and a higher qualification in medicine, surgery or radiology is essential.

Applications (16 copies), stating age, qualifications and experience, together with the names of 3 referees, should be sent to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1, from whom further particulars may be obtained, not later than 31st July, 1954.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited to fill a vacancy for an ASSISTANT RADIOLOGIST (whole-time or 9 notional half-days a week) to the Bromley, Kent, Group of hospitals. Candidates must have had general experience in radiology and possession of an appropriate diploma is desirable. Salary within the scale £1500–£50–£1950.

Apply, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 17th July, 1954.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited to fill a vacancy for a CONSULTANT ANÆSTHETIST (part-time 9 notional half-days a week) at the Medway and Gravesend Group of hospitals. Candidates must have had wide experience in anæsthetics and hold the qualification of D.A. or F.F.A.R.C.S. Applicants may visit the hospitals concerned.

Apply, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 17th July, 1954.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires a Locum Tenens ANÆSTHETIST (9 half-days per week) for the Salisbury Group of hospitals, from 26th July to 4th September, 1954. Remuneration will be at the rate of 45 guineas per week (if holding National Health Service Consultant grading), or 31½ guineas per week.

Applications to Area Secretary, South West Metropolitan Regional Hospital Board, Highcroft, Romsey-road, Winchester.

WELSH REGIONAL HOSPITAL BOARD. Whole-time PSYCHIATRIST (Senior Hospital Medical Officer), St. David's Hospital, Carmarthen (950 Beds, all modern methods of treatment, active outpatient clinics). House available.

Applications (12 copies), naming 3 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 21 days.

WELSH REGIONAL HOSPITAL BOARD.

CONSULTANT ANÆSTHETIST to work partly in Cardiff Area and partly in Caerphilly District. Successful candidate will be expected to work in collaboration with the Department of Anæsthetics in Cardiff. Whole-time/maximum part-time appointment optional.

Whole-time ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer scale), North Wales Hospital for Nervous and Mental Disorders, Denbigh. Hospital provides comprehensive Mental Health Service for North Wales. Outpatient clinics at major general hospitals and associated Child Guidance Services. Every modern therapy and Departments of Psychology and Electroencephalography. Modern open-door reception units with annual admission-rate of over 800.

Applications (12 copies), naming 3 referees, to Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 21 days.

SOUTH AFRICAN BLOOD TRANSFUSION SERVICE. Applications are invited from registered medical practitioners with experience in blood-transfusion and bacteriology for the position of SEROLOGIST of the South African Blood Transfusion Service. The appointment will be made on the salary scale £1700–£100–£2400 p.a. but, in determining the commencing salary cognisance may be taken of previous experience and special qualification. The successful applicant will be expected to assume duty in Johannesburg on 1st November, 1954. Membership of the Service's Staff Provident Fund is a condition of employment.

Applications, stating full details of age, qualifications, experience, marital status, &c., should be submitted in writing to the Secretary, South African Blood Transfusion Service, P.O. Box 9326, Johannesburg, so as to be received not later than 15th August, 1954. The Medical Director of the Service will be in London early in September, 1954, to interview applicants at a time and place to be advised.

IRELAND. ST. JOHN OF GOD PRIVATE PSYCHIATRIC HOSPITAL, STILLORGAN, CO. DUBLIN, IRELAND. (Conducted by Brothers of St. John of God. Hospital contains 135 Beds.) Applications are invited for the position of RESIDENT MEDICAL DIRECTOR at above Hospital. Candidates should be of Consultant status and possess the highest qualifications.

Application forms with particulars sent on request. Completed forms to be returned not later than 31st August, 1954, to Brother Secretary, St. John of God Private Psychiatric Hospital, Stillorgan, co. Dublin, Ireland.

NORTHERN IRELAND HOSPITALS AUTHORITY invite applications for a whole-time post as CONSULTANT RADIOLOGIST at hospitals managed by the Coleraine and Portrush and North Antrim Hospital Management Committees. The terms and conditions of the appointment will be in accordance with the Authority's application of the Spens Report to Northern Ireland.

Applications should be made on a form which may be obtained (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, Victory Buildings, 44–46, Queen-street, Belfast, and will be received not later than 31st July, 1954.

Hospital Services : Junior Appointments

ACTON HOSPITAL, Gunnersbury-lane, W.3. House OFFICER (resident) required for inpatient duties—medical and surgical. Post now vacant.

Applications to Hospital Secretary within 7 days.

BETHLEM ROYAL HOSPITAL AND THE MAUDSLEY HOSPITAL AND CANE HILL HOSPITAL. Applications are invited from registered medical practitioners for appointment as SENIOR REGISTRAR (first year), commencing 1st October, 1954, at the above postgraduate Teaching Hospital, with which is associated the Institute of Psychiatry (University of London). The successful candidate, subject to his qualifying for annual renewal, will serve his first 2 years at the Bethlem Royal Hospital and the Maudsley Hospital, and his remaining 2 years at Cane Hill Hospital. Candidates should have a higher medical qualification and experience in psychiatry is essential. Opportunities for research are available.

Applications, giving details of experience and the names of 3 referees, should be made within 14 days of the appearance of this advertisement. Application forms obtainable from K. J. JOHNSON, House Governor and Secretary, Maudsley Hospital, Denmark-hill, London, S.E.5.

BETHNAL GREEN HOSPITAL, Cambridge Heath-road, London, E.2. (General—310 Beds.) Applications are invited for the posts of 3 HOUSE PHYSICIANS. Recognised pre-registration posts.

Applications, stating age, qualifications, nationality, and experience, with copies of 2 recent testimonials, to the Hospital Secretary, as soon as possible.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.11. HOUSE SURGEON (resident), vacant 19th July. Open to registered practitioners and pre-registration candidates.

Apply Hospital Secretary, enclosing copies of 3 recent testimonials, by 12th July.

BROOK GENERAL HOSPITAL, Shooters Hill-road, S.E.18. HOUSE PHYSICIAN, vacant 17th August. Approved for Pre-registration Service.

Apply, with copy testimonials, to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

DULWICH HOSPITAL (in association with Kings College Hospital Medical School for Teaching purposes), East Dulwich-grove, London, S.E.22. Applications invited for appointment as SENIOR HOUSE OFFICER (obstetrics and gynæcology). Post vacant as from 1st August. Recognised for M.R.C.O.G. examination (obstetrics).

Applications, stating age and details of qualifications and experience with copy testimonials, to the Group Secretary, Dulwich Hospital, S.E.22.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. (ROYAL FREE HOSPITAL GROUP.) Applications are invited from pre-registration and registered Women medical practitioners for the post of OBSTETRIC HOUSE SURGEON (recognised for the M.R.C.O.G.). Duties to commence 1st September, 1954. Appointment for 6 months. Salary in accordance with Ministry of Health scale for House Officers.

Applications, with copies of 3 recent testimonials, to be sent to the Secretary, Elizabeth Garrett Anderson Hospital, by 14th July, 1954.

GERMAN HOSPITAL, Dalston, E.8. (General—157 Beds.) Applications are invited from registered medical practitioners for the 6 months appointment of HOUSE SURGEON, now vacant, and should be sent to the Group Secretary, Hackney Hospital, London, E.9, quoting reference GH/HS.

KING EDWARD MEMORIAL HOSPITAL, Ealing. SOUTH WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER required for general surgery (some duties in E.N.T.). Preference given to person seeking pre-registration post.

Applications, stating age, nationality, qualifications obtained, with copies of up to 2 recent testimonials, to Group Secretary, West Middlesex Hospital, Isleworth, by 6th July, 1954.

MEMORIAL HOSPITAL, Woolwich, S.E.18. Woolwich GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON. 2 vacancies 1st August. Recognised for F.R.C.S. and approved for Pre-registration Service.

Apply, with copies of testimonials, to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

MIDDLESEX HOSPITAL, W.1. Applications invited from registered medical practitioners for the post of JUNIOR RESIDENT ASSISTANT ANÆSTHETIST graded as House Officer, vacant on 1st August.

Forms of application, obtainable from Deputy Superintendent, should be submitted, naming 2 referees, by 15th July.

NEASDEN HOSPITAL, Brentfield-road, N.W.10. (Tel. No. WILlesden 1850.) Locum Tenens RESIDENT MEDICAL OFFICER (Registrar). Whole-time Resident Registrar required for above Hospital for 19th July, 1954–1st August, 1954, both dates inclusive. This Hospital admits all types of acute infectious diseases and offers a wide clinical experience and opportunity for postgraduate studies.

Applications should be made to the Physician-Superintendent as soon as possible.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited from registered medical practitioners for the appointment of REGISTRAR (non-resident) at The National Hospital, Queen-square, W.C.1. This post carries the grade of Senior Registrar. Previous neurological experience and higher medical qualification are desirable. The appointment will be for 1 year in the first instance.

Applications, with names of 3 referees, to be sent to the undersigned immediately. H. EWART MITCHELL, Secretary.

The National Hospital, Queen-square, W.C.1.

NORTH WEST METROPOLITAN REGIONAL HOS-PITAL BOARD. SENIOR REGISTRAR at Willesden Chest Clinic, Pound-lane, N.W.10, and Clare Hall Hospital, South Mimms, Barnet. The first 2 years will be spent at Chest Clinic, and duties will include work on the district, supervision of beds in Tuberculosis Unit at Central Middlesex Hospital, and teaching, followed by opportunity of further 2 years (approximately) at Clare Hall Hospital. Good training in general medicine and chest diseases essential. Higher medical qualifications desirable. Appointment subject to annual review. Clinic may be visited by direct appointment.

Application forms obtainable from and returnable to Group Secretary, Central Middlesex Group Hospital Management Committee, Acton-lane, N.W.10, by 17th July, 1954.

LAMBETH HOSPITAL, Kennington, S.E.11. Applications are invited from pre-registration and registered medical practitioners for the position of RESIDENT HOUSE PHYSICIAN, vacant 1st August, 1954.

Forms of application from the Physician-Superintendent.

PLAISTOW HOSPITAL, Samson-street, London, E.13. (185 Beds.) Applications are invited for the appointment of RESIDENT HOUSE PHYSICIAN (pre-registration second post), for 6 months, commencing as soon as possible in the Chest Unit and Infectious Diseases Unit at this Hospital. The position offers valuable experience in both groups of diseases and is particularly useful to candidates sitting for the M.R.C.P. examination.

Applications to M. J. HUNTLEY, Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, by 14th July.

POPLAR HOSPITAL, East India Dock-road, E.14. (120 Beds.) Required, HOUSE SURGEON. Duties include inpatient, outpatient and casualty work. Post recognised for F.R.C.S. Vacant on 1st August.

Applications, stating age, nationality and qualifications, to the Secretary.

POPLAR HOSPITAL, East India Dock-road, E.14. (120 Beds.) Required, CASUALTY HOUSE SURGEON. Duties include inpatient, outpatient and casualty work. Post recognised for F.R.C.S. Vacant now.

Applications, stating age, nationality and qualifications, to the Secretary.

PRINCE OF WALES'S GENERAL HOSPITAL, N.15. (219 Beds.) Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER RESIDENT SENIOR HOUSE SURGEON for Casualty, for a period of 6 months, to commence immediately.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15.

PRINCESS BEATRICE HOSPITAL, Earls Court, S.W.5. HOUSE PHYSICIAN (Junior House Officer grade). Post-registration. Vacancy 1st August.

Apply by 17th July, stating age and qualifications, enclosing 3 testimonials, to House Governor.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN MANAGEMENT COMMITTEE, Hackney-road, E.2, Shadwell, E.1, and BANSTEAD WOOD, SURREY. HOUSE OFFICER. This appointment will be made for 2 consecutive periods of 6 months, commencing 1st September, 1954. First appointment as House Physician and second as House Surgeon and Casualty Officer.

Application forms may be obtained from the Secretary at Hackney-road, and should be returned, with copies of not more than 3 testimonials, on or before 20th July, 1954.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.15. PÆDIATRIC HOUSE PHYSICIAN required (third post); duties will include some work in related departments (e.g., diabetic clinic, &c.). 6 months appointment commencing as soon as possible. The post is recognised for the D.C.H.

Applications, with copies of recent testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 17th July, 1954.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.15. HOUSE SURGEON (Male or Female) required (pre-registration first or second post) for 6 months commencing 11th August, 1954.

Applications, with copies of recent testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 17th July, 1954.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.15. JUNIOR CASUALTY OFFICER (Male or Female) required (House Officer—third post) for 6 months commencing as soon as possible.

Applications, with copies of recent testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 8th July, 1954.

ROYAL CANCER HOSPITAL, Fulham-road, London, S.W.3. Applications are invited from registered medical practitioners for the 2 posts of HOUSE SURGEON (resident). Salary £525 p.a. The posts are tenable for 6 months from 1st September, 1954.

Forms of application are obtainable from the House Governor to whom applications, together with copies of 3 recent testimonials, should be sent not later than Wednesday, 14th July, 1954.

ROYAL NORTHERN HOSPITAL, Holloway, N.7. Applications are invited for the post of CASUALTY OFFICER (Senior House Officer grade), vacant 27th July, 1954. The post includes some duties in the E.N.T. Department, and is recognised for F.R.C.S.

Applications, to be sent to the Hospital Secretary by 10th July, 1954.

REGIONAL NEUROSURGICAL CENTRE. (50 Beds.) BROOK GENERAL HOSPITAL, Shooters Hill-road, S.E.18. SENIOR HOUSE OFFICER (neurosurgery), vacant 1st August. The post, which is recognised for F.R.C.S., also provides excellent opportunity for training in neurology. Salary £745 p.a., less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

S.E. REGIONAL THORACIC SURGERY UNIT. (46 Beds.) BROOK GENERAL HOSPITAL, Shooters Hill-road, S.E.18. SENIOR HOUSE OFFICER (recognised for F.R.C.S.), vacant now. The Unit treats all types of chest diseases and offers opportunity for comprehensive training in thoracic surgery. Appointment for 6 months in first instance and may be renewed for further period.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. (593 Beds.) Applications are invited for the under-mentioned posts :—

SENIOR HOUSE OFFICER (casualty) (1 of 2), commencing 1st August, 1954.

HOUSE PHYSICIAN (general duties). Pre-registration post.

Applications, stating age, qualifications, experience, together with names and addresses of 2 referees, to reach Hospital Secretary by 14th July, 1954.

ST. DAVID'S HOSPITAL, Silver-street, Edmonton, N.18. VISITING MEDICAL OFFICER (general practitioner grade) required for 3 sessions a week. Daily visits to the Hospital where there are approximately 200 sane male epileptic patients.

Applications, stating age, qualifications, experience, nationality, with names of 2 referees, to Group Secretary, North Middlesex Hospital, Silver-street, Edmonton, N.18, by 12th July, 1954.

ST. CLEMENT'S HOSPITAL, London, E.3. Bow Group HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER required for Psychiatric Unit consisting of 24 observation beds and 36 beds for treatment of neuroses and early psychoses. Unit run in conjunction with The London and Claybury Hospitals. Post is recognised for D.P.M.

Apply to Group Secretary, Committee Offices, 2A, Bow-road, E.3, with names of 3 referees.

ST. GILES' HOSPITAL, Camberwell, London, S.E.5. Applications invited for appointment as HOUSE OFFICER (orth pædic duties). Recognised pre-registration post. Vacant from early July.

Applications to the Group Secretary, Camberwell Hospitals Management Committee, Dulwich Hospital, East Dulwich-grove, S.E.22.

ST. GILES' HOSPITAL, St. Giles'-road, Camberwell, S.E.5. Applications invited for appointment as SENIOR HOUSE OFFICER (obstetrics and gynæcology). Post vacant 24th July, 1954. Recognised for M.R.C.O.G. examination.

Applications, stating age and details of qualifications and experience, with copy testimonials, to the Group Secretary, Camberwell Hospital Management Committee, Dulwich Hospital, East Dulwich-grove, S.E.22.

ST. MARY ABBOTS HOSPITAL, Marloes-road, Kensington, W.8. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. FULHAM AND KENSINGTON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for appointment at above Hospital as REGISTRAR (surgical), vacant 1st August. Candidates may visit the Hospital by arrangement with the Surgeon-Superintendent.

Applications (5 copies required to be completed) to be submitted by 9th July, 1954, on forms obtainable from the Group Secretary (12.L.), Fulham and Kensington Hospital Management Committee, 5, Collingham-gardens, London, S.W.5 (send stamped addressed foolscap envelope).

ST. NICHOLAS HOSPITAL, Plumstead, S.E.18. Senior HOUSE OFFICER (Casualty Department), vacant 1st August. Recognised for F.R.C.S. Appointment for 6 months in first instance and may be renewed for further period. Salary £745 p.a., less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. PETER'S, ST. PAUL'S AND ST. PHILIP'S HOSPITALS AND THE INSTITUTE OF UROLOGY. A vacancy will occur on 1st September, 1954, for the combined post of RESIDENT SURGICAL OFFICER at St. Philip's and FOLLOW-UP OFFICER to the Institute. Grading, Registrar first year. Appointment for 6 months with opportunity for extension.

Apply, in writing (6 copies), and names of 2 referees, to the House-Governor, St. Peter's Hospital, Henrietta-street, W.C.2. Closing date 24th July, 1954.

ST. STEPHEN'S HOSPITAL, Chelsea, S.W.10. Senior HOUSE OFFICER (general medicine including chest diseases), non-resident. Vacancy mid-August.

Applications, naming 2 referees, to Medical Superintendent.

ST. GEORGE'S HOSPITAL, S.W.1. Applications are invited for the post of REGISTRAR to the Fever and Tuberculosis Units at the Grove Hospital, S.W.17. The successful candidate will be required to take up his duties as soon after 1st September as possible. The appointment is for 1 year in the first instance.

Applications, giving details of age, education, qualifications, experience and the names of 2 referees, should be received by the undersigned not later than 17th July, 1954.

P. H. CONSTABLE, House Governor.

ST. GEORGE'S HOSPITAL, S.W.1. Applications are invited for the post of HOUSE SURGEON (resident) in the grade of Senior House Officer to the Department of Neurosurgery at Atkinson Morley's Hospital, Wimbledon. The successful candidate will be required to take up duty as soon after 31st July, 1954, as possible.

Applications, giving details of age, education, qualifications, experience and the names of 2 referees, should be received by the undersigned not later than 17th July, 1954.

P. H. CONSTABLE, House Governor.

WESTMINSTER HOSPITAL, St. John's-gardens, S.W.1. Applications invited for post of SENIOR HOUSE OFFICER to E.N.T. Department for 1 year from 10th September.

Applications (6 copies), with names of 2 referees, to House Governor by 17th July.

WILLESDEN GENERAL HOSPITAL, Harlesden-road, N.W.10. RESIDENT CASUALTY OFFICER required (Senior House Officer) for a period of 6 months from 26th July, 1954. Post recognised for training under Fellowship regulations. Salary £745 p.a., less £125 p.a. for residence.

Applications, with full particulars, to Hospital Secretary by 14th July.

ABERYSTWYTH. GENERAL HOSPITAL. (Hospital recognised for F.R.C.S. examination.) MID-WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from newly qualified medical practitioners seeking pre-registration posts under the Medical Act, 1950, for the resident post of HOUSE SURGEON at the above Hospital. Busy General Hospital. Salary on national scale, less deduction for board and lodging.

Applications, with 2 testimonials, to the Group Secretary, Mid-Wales Hospital Management Committee, General Hospital, Aberystwyth, immediately.

ALTON, HAMPSHIRE. HENRY GAUVAIN HOSPITAL (formerly Morland Clinics). (120 Beds.) SENIOR HOUSE OFFICER required for the above Hospital for period of 1 year from mid-August. Salary £745 p.a. Non-pulmonary tuberculosis, orthopædic and general surgery. Married accommodation available in small cottage on estate at moderate charge. Primary or Final F.R.C.S. candidate preferred.

Apply to the Secretary, Lord Mayor Treloar Group Hospital Management Committee, Lord Mayor Treloar Orthopædic Hospital, Alton, Hants.

ARBROATH INFIRMARY, Angus. (105 Beds.) Applications are invited for the appointment of 2 HOUSE SURGEONS at the above Infirmary. These posts which are recognised for pre-registration training, but are open to fully registered medical practitioners, will fall vacant on 1st August.

Applications, giving age, qualifications, and experience, and naming 2 referees, should be addressed to the Medical Superintendent.

ASCOT, BERKSHIRE. HEATHERWOOD ORTHOPÆDIC HOSPITAL. Locum ORTHOPÆDIC REGISTRAR required immediately. Salary £16 per week, less residential charge at rate of £150 p.a.

Apply Hospital Secretary (Telephone : Ascot 153).

AYLESBURY, BUCKINGHAMSHIRE. ROYAL BUCKINGHAMSHIRE HOSPITAL. Locum CASUALTY OFFICER for 1 week from 18th July. Salary £13 per week.

Applications, with names of 2 referees, to the Secretary-Superintendent.

AYLESBURY, BUCKINGHAMSHIRE. STOKE MANDEVILLE HOSPITAL. (611 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER for National Spinal Injuries Centre. Neurological or surgical experience desirable. Vacant now.

Applications, with copies of 2 recent testimonials, to the Administrative Officer.

BEDFORD GENERAL HOSPITAL. (437 Beds.) Resident HOUSE PHYSICIAN required end of July (pre-registration post).

Applications, stating age, nationality, qualifications, previous appointments, together with copies of 2 testimonials, should be forwarded to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEDFORD GENERAL HOSPITAL. (437 Beds.) Resident HOUSE SURGEON (pre-registration) required immediately. The appointment offers exceptional opportunity for general experience in a busy acute Surgical Unit.

Applications, stating age, nationality, qualifications, previous appointments, together with copies of 2 testimonials, should be forwarded to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEDFORD GENERAL HOSPITAL. (437 Beds.) North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR required for busy acute Orthopædic and Traumatic Department at above Hospital. Previous orthopædic experience desirable. Candidates may visit Hospital by appointment with Group Secretary.

Application forms obtainable from, and returnable to, Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford, as soon as possible.

BEDFORD GENERAL HOSPITAL. (437 Beds.) Locum REGISTRAR required for busy acute Orthopædic and Traumatic Department for approximately 2 months. Previous orthopædic experience desirable.

Applications, stating age, nationality, qualifications, previous appointments, together with copies of 2 recent testimonials, should be forwarded to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (207 general beds.) Locum HOUSE PHYSICIAN required at above Hospital for the fortnight 26th July–8th August, 1954. Senior House Officer grading. Salary £13 a week. Residential accommodation available at the Hospital.

Applications to Group Secretary.

BEXHILL, SUSSEX. BEXHILL HOSPITAL. (62 Beds.) 2 HOUSE SURGEONS. Posts vacant now. A small modern Hospital on the South Coast, considerable acute surgical work and busy Outpatient Department, excellent all-round experience. National scale of salary.

Apply to Hospital Administrator.

BATH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of HOUSE SURGEON (orthopædic) which is a joint one between the Royal United and Bath and Wessex Orthopædic Hospitals, both hospitals being adjacent to each other. The post is graded Senior House Officer although applications may be considered from persons interested in applying for a House Officer post.

Applications, stating age, qualifications, and experience, with the names of 3 referees, should be forwarded to undersigned as soon as possible.

Manor Hospital, Bath. J. LAWRENCE MEARS, Secretary.

BATH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for 2 posts of HOUSE ANÆSTHETIST (Senior House Officer grade) which will shortly become vacant at Royal United and St. Martin's Hospitals. Facilities for attending evening lectures, when held, at Bristol for the higher Diploma in Anæsthetics examination will be made available. Both hospitals are recognised under F.F.A.R.C.S. and D.A. regulations.

Applications, stating age, qualifications and experience, should be forwarded to J. LAWRENCE MEARS, Secretary.

Manor Hospital, Bath.

BATH. ROYAL NATIONAL HOSPITAL FOR RHEUMATIC DISEASES. Applications are invited from registered medical practitioners for post of HOUSE PHYSICIAN (Senior House Officer grade) at the above Hospital, attached to which is the Rheumatic Research Unit of South-Western and Oxford Regions. The Hospital is recognised for Part 2 of Diploma in Physical Medicine.

Applications, stating age, qualifications and experience with 3 testimonials, should be forwarded to—

J. LAWRENCE MEARS, Secretary,
Bath Hospital Management Committee.

Manor Hospital, Bath.

BATH. ST. MARTIN'S HOSPITAL. Applications are invited from medical practitioners for post of HOUSE SURGEON (orthopædic) at above Hospital. Post offers opportunity not only in traumatic surgery but in "cold" orthopædics and specialised field of arthritic surgery. Post recognised under F.R.C.S. regulations and for pre-registration purposes.

Applications, stating age, qualifications and experience with 3 testimonials, should be forwarded to—

J. LAWRENCE MEARS, Secretary,
Bath Hospital Management Committee.

Manor Hospital, Bath.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

1. Birmingham (Selly Oak) Hospital Management Committee, Oak Tree-lane, Birmingham, 29

(a) REGISTRAR in General Surgery. Duties at Little Bromwich Hospital and Solihull Hospital. Higher qualification desirable. Resident at Little Bromwich Hospital.

(b) REGISTRAR in General Medicine. Duties mainly at Little Bromwich Hospital (372 Beds), including work in infectious diseases wards. Experience in specialty essential. Higher qualification desirable. Resident.

2. No. 20 Group Hospital Management Committee, Stoney Stanton-road, Coventry

REGISTRAR in Psychiatry. Outpatient clinics (adults and children) at Coventry, Nuneaton and Rugby Hospitals (7 sessions); 4 inpatient sessions at Central Hospital, near Warwick, with Neurosis Unit, E.E.G. Department, occupational therapy and all modern treatments. House or flat at Central Hospital.

Application forms from Group Secretaries, to be returned before 19th July, 1954. Candidates may visit hospitals.

BIRMINGHAM. SOLIHULL HOSPITAL, Lode-lane, SOLIHULL. HOUSE SURGEON (pre-registration post). Post vacant early July. General Hospital and offers good experience. 5 other resident medical officers.

Applications immediately to the Medical Superintendent.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the post of SENIOR HOUSE OFFICER in Pædiatrics (non-resident) vacant immediately, for duties at the Birmingham Maternity Hospital, Loveday-street, and the Maternity Department of the Queen Elizabeth Hospital. Previous experience, resident, in a Children's Hospital is essential, and candidates should hold the D.C.H.

Applications, stating age, nationality, qualifications and previous appointments, should be forwarded to the House Governor, Birmingham and Midland Hospitals for Women, Showell Green-lane, Birmingham, 11, not later than 19th July, 1954.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the posts of RESIDENT REGISTRAR in Anæsthetics for duties in the United Hospitals and resident at the Queen Elizabeth Hospital. The appointments are tenable for 1 year in the first instance. Preference will be given to candidates who have passed Part I, D.A., or Primary F.F.A.R.C.S.

Application forms may be obtained from the Secretary to the Board of Governors, Queen Elizabeth Hospital, Birmingham, 15, and should be returned to him not later than 17th July, 1954.

BIRMINGHAM. HIGHCROFT HALL MENTAL HOSPITAL, ERDINGTON, BIRMINGHAM. JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident). Salary £775–£1075 p.a. There will be scope for work in the use of modern psychiatric methods in the wards.

Applications to Medical Superintendent.

BIRMINGHAM, 9. LITTLE BROMWICH HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER for Infectious Diseases (Male or Female). The Hospital serves a wide area and gives excellent opportunities for the study of infectious diseases. Part of the Hospital is being developed as a general hospital, where further experience can be gained.

Applications to Physician-Superintendent.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL, Edmund-street, BIRMINGHAM, 3. Required, SENIOR HOUSE OFFICER or HOUSE OFFICER according to experience.

Detailed applications, with copies of 2 recent testimonials, to the Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL, Edmund-street, BIRMINGHAM, 3. Pre-registration HOUSE OFFICER required.

Detailed applications, with copies of 2 recent testimonials, to the Secretary, Dudley Road Hospital, Birmingham, 18.

BISHOP AUCKLAND GENERAL HOSPITAL. (350 Beds.) Applications are invited from registered practitioners or pre-registration candidates for the post of HOUSE PHYSICIAN (vacant early August). Salary £425–£525 p.a. according to previous posts held, less £125 p.a. for full residential emoluments.

Applications, stating age, nationality, qualifications and experience, to be sent, with names of 2 referees, to the undersigned as soon as possible.

K. G. T. LUXFORD, Group Secretary/Finance Officer,
South West Durham Hospital Management Committee.
The General Hospital, Bishop Auckland.

BISHOP AUCKLAND GENERAL HOSPITAL. (350 Beds.) Applications are invited from registered practitioners or pre-registration candidates for the post of HOUSE SURGEON (general surgery—72 Beds). Salary £425–£525 p.a. according to previous posts held, less £125 p.a. for full residential emoluments.

Applications, stating age, nationality, qualifications and experience, to be sent, with names of 2 referees, to the undersigned as soon as possible.

K. G. T. LUXFORD, Group Secretary/Finance Officer,
South West Durham Hospital Management Committee.
The General Hospital, Bishop Auckland.

BLACKPOOL. VICTORIA HOSPITAL. (344 Beds.) (1) SENIOR HOUSE OFFICER (Orthopædic and Casualty Department), vacant 20th July, 1954. Recognised for 6 months casualty training for Final F.R.C.S. examination.

(2) HOUSE SURGEON (casualty), vacant 1st September, 1954. Recognised for 6 months casualty training for Final F.R.C.S. examination.

(3) RESIDENT HOUSE SURGEON (Surgical Department), vacant 14th September, 1954. Recognised for F.R.C.S.

(4) HOUSE PHYSICIAN, vacant 31st July, 1954.

This is a busy general hospital with a large Outpatient Department and the posts offer excellent opportunities for experience under Consultant staff.

Applications, with names and addresses of referees, should be sent to the Hospital Secretary.

BOLTON DISTRICT GENERAL HOSPITAL. (604 Beds, including 63 for pædiatrics, premature nursery, and 109 for obstetrics.) BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SENIOR HOUSE OFFICER for Department of Pædiatrics, vacant early September, tenable for 12 months. Previous experience in pædiatrics desirable. The Hospital is recognised for the D.C.H. Duties will include supervision of new-born and premature infants in addition to care of sick children.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, to be sent immediately to—

H. P. TRAVIS, Group Secretary.
The Royal Infirmary, Bolton.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. ROYAL VICTORIA HOSPITAL, WEST-BOURNE, HANTS. Applications are invited for the appointment of HOUSE SURGEON for E.N.T. and ophthalmic duties, vacant 18th July, 1954. In addition to duties at the above Hospital, the successful candidate will be required to assist in the E.N.T. outpatient clinics at the Royal Victoria Hospital, Bournemouth and Poole General Hospital. The appointment is recognised for the D.O. and D.L.O. Diplomas but not for pre-registration purposes.

Applications to the Deputy Hospital Secretary, Royal Victoria Hospital, Shelley-road, Bournemouth.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road, BOSCOMBE. (490 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of GENERAL HOUSE SURGEON, vacant 13th July. The appointment is recognised for the F.R.C.S. examination and for pre-registration purposes.

Applications to the Deputy Hospital Secretary at the Hospital.

BRADFORD ROYAL INFIRMARY. House Officer (anæsthetics), vacant now. Recognised for D.A. and F.F.A. R.C.S. Opportunities for plastic and intra-thoracic experience. Salary £425–£525 p.a., less £125 p.a. residential emoluments.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary.

BRADFORD. ST. LUKE'S HOSPITAL.

RESIDENT SENIOR HOUSE OFFICER (medicine and pathology), vacant 1st August. Salary £745 p.a.

HOUSE OFFICER (anæsthetics), vacant now. Recognised for D.A. and F.F.A.R.C.S. Opportunities for plastic and intra-thoracic experience. Salary £425–£525 p.a., less £125 residential emoluments.

Applications for either of above posts, stating age, nationality, qualifications and experience with copy testimonials, to Secretary, Bradford Royal Infirmary.

BRENTWOOD, ESSEX. HIGH WOOD HOSPITAL FOR CHILDREN. Temporary REGISTRAR required for 3 months from 28th June. The Hospital admits cases of pulmonary tuberculosis in children. Possibility of a permanent vacancy later. Please apply to Senior Physician.

BRIGHTON GENERAL HOSPITAL, Elm-grove, Brighton. RESIDENT ANÆSTHETIST (Senior House Officer). Based on the Brighton General Hospital, with duties at other hospitals in the Group. Post vacant now and is recognised for F.F.A.R.C.S.

Applications, stating age, qualifications and experience, with names and addresses of 2 referees, to the Physician-Superintendent as soon as possible.

BRIGHTON GENERAL HOSPITAL. Applications are invited for the appointment of HOUSE SURGEON to the General Surgical Unit (60 Beds), recognised for F.R.C.S. The post will be vacant about 23rd July, 1954. Salary in accordance with national scale. The post is recognised as a pre-registration appointment.

Applications, stating age, qualifications, experience and giving the names of 2 referees, should be sent to the Physician-Superintendent, Brighton General Hospital, Elm-grove, Brighton, 7.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (300 Beds.) Applications are invited for the following posts :—

HOUSE SURGEON. Pre-registration and recognised for F.R.C.S.

CASUALTY HOUSE SURGEON (1 of 3). Duties include work in Orthopædic and Traumatic Unit. Pre-registration and recognised for F.R.C.S.

Both vacant mid-July.

Applications, stating age, qualifications and experience, naming 2 referees, to be sent to the Administrative Officer.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. FRENCHAY HOSPITAL. (513 staffed beds, expanding.) Applications are invited for the post of SENIOR HOUSE OFFICER in the regional Neurosurgery Department, vacant 1st August, 1954. This post offers useful surgical experience and the opportunity of gaining a working knowledge of neurological diagnosis.

Applications to the Secretary, Frenchay Hospital, quoting "N.S.F." Names of 2 referees required.

BRISTOL. COSSHAM/FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. FRENCHAY HOSPITAL. THORACIC SURGERY DEPARTMENT. HOUSE SURGEON required in the above Department, which is the regional Thoracic Surgery Centre (120 Beds) for the South West.

Applications, with full particulars, should be addressed to the Group Secretary, Frenchay Hospital, Bristol, quoting "Thoracic."

BROMSGROVE. ALL SAINTS' HOSPITAL. (423 Beds.) Locum HOUSE SURGEON required at the above Hospital. Salary £8 per 48 hour week. Post vacant early July.

Applications, with the names of 3 referees, to Hospital Secretary.

BURTON-ON-TRENT GENERAL INFIRMARY. (251 Beds.) RESIDENT HOUSE SURGEON required for General Surgical Unit. Designated for Pre-registration Service. The Hospital is recognised for the F.R.C.S.

Applications, with full details, naming 2 referees, should be sent to the Secretary.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. ROSSENDALE GENERAL HOSPITAL. SENIOR HOUSE OFFICER (obstetrics), resident or non-resident, for Obstetric/Gynæcological Unit consisting of 24 obstetric and 8 gynæcological beds.

Applications to H. WILKINSON Esq., Group Secretary. Bury General Hospital, Bury, Lancs.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. BURY GENERAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (orthopædics) at the above Hospital. Salary and conditions of service in accordance with national rules.

Applications should be made by letter to—

H. WILKINSON, Group Secretary.
Bury General Hospital, Walmersley-road, Bury, Lancs.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. House SURGEON for 6 months from 1st September, 1954. Recognised Pre-registration Service.

Apply, stating age, nationality, qualifications, and experience with dates, and copies of 3 testimonials, to Secretary by 17th July. Interviews 26th July.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. House PHYSICIANS (2) for 6 months from 1st September, 1954. Recognised Pre-registration Service.

Apply, stating age, nationality, qualifications and experience with dates, and copies of 3 testimonials, to the Secretary by 17th July. Interviews 27th July, 1954.

CHEPSTOW, MONMOUTHSHIRE. ST. LAWRENCE HOSPITAL. (150 Beds.) **PLASTIC SURGERY, JAW INJURIES AND BURNS CENTRE.** SENIOR HOUSE OFFICER (resident) in Plastic Surgery required. Previous experience in specialty not essential. The successful candidate will receive a thorough training in plastic surgery and burns. Hospital intakes from most of Wales and post provides extensive experience. Salary £745, less £150 for board-residence.

Write, quoting 2 referees, to Group Secretary, 64, Cardiff-road, Newport, Mon.

CHELMSFORD AND ESSEX HOSPITAL. (161 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON (pre-registration post). The post will become vacant on 24th July and offers good surgical experience and is recognised for the F.R.C.S.

Applications, together with 2 recent testimonials, to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHELMSFORD AND ESSEX HOSPITAL, London-road, CHELMSFORD. (161 Beds.) Applications are invited for the post of HOUSE PHYSICIAN (pre-registration post), to work in the general medical wards of the above Hospital. Duties will commence 7th August.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHELMSFORD. ST. JOHN'S HOSPITAL. Applications are invited from registered practitioners for the post of RESIDENT PÆDIATRIC HOUSE OFFICER (Male or Female), commencing 17th July, 1954. To work in the Pædiatric Unit of the Chelmsford Hospital Group. The Unit includes a Premature Baby Nursery of 10 cots and a Neonatal Department in the maternity block of the Hospital. The work is recognised for the D.C.H.

Applications, together with recent testimonials, should be sent, not later than 8th July, to the Secretary, Hospital Management Committee—Chelmsford Group, Chelmsford and Essex Hospital, London-road, Chelmsford.

CARLISLE. CUMBERLAND INFIRMARY. (340 Beds.) SENIOR HOUSE OFFICER required ("Specials"—E.N.T. and eyes).

Apply, with names for reference, to the Secretary.

CARLISLE. CUMBERLAND INFIRMARY. (340 Beds.) HOUSE OFFICER required (gynæcology and obstetrics). Pre-registration candidates are eligible to apply.

Apply, with names for reference, to the Secretary.

CARLISLE. CUMBERLAND INFIRMARY. (340 Beds.) Applications are invited for the appointment of SENIOR HOUSE OFFICER (general surgery), which is recognised for the F.R.C.S. examinations and is for a period of 1 year.

Applications, giving the names of 2 referees, should be sent to the Secretary as soon as possible.

CHESTERFIELD ROYAL HOSPITAL. Chesterfield HOSPITAL MANAGEMENT COMMITTEE. RESIDENT CASUALTY OFFICER (pre-registration grade, or Senior House Officer if person appointed has sufficient experience), required at above Hospital immediately. National salary and conditions. The Casualty Department includes 2 Junior and 1 Senior Casualty Officers, and the post is recognised for F.R.C.S. training. Duties are primarily in the Casualty Department, but by mutual arrangement 1 Casualty Officer performs duties in the Accident and Orthopædic Department, so that opportunities occur for all 3 officers to gain experience in that specialty.

Apply in detail, with copies of recent testimonials, to—

M. H. BOONE, Secretary.

CHESTERFIELD HOSPITAL MANAGEMENT COMMITTEE. Whole-time NON-RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER required for Whittington Hall, Chesterfield (372 female mentally deficient patients) and Scarsdale Hospital, Chesterfield. Salary scale now £775–£50–£1075 p.a.

Apply, M. H. BOONE, Secretary, at Chesterfield Royal Hospital.

COATBRIDGE, AIRDRIE AND DISTRICT HOSPITALS BOARD OF MANAGEMENT. Applications are invited from suitably qualified medical practitioners for the following RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER posts. Salary £775–£50–£1075 p.a.

(1) Coathill Hospital, Coatbridge (infectious diseases, tuberculosis and geriatrics) and Lightburn Hospital, Shettleston (infectious diseases and tuberculosis). Resident accommodation is available for a single person at Lightburn Hospital or for a married person at Coathill Hospital. The officer appointed will be required to undertake duty at both hospitals and possession of a car will be an advantage.

(2) Longriggend Sanatorium, by Greengairs (tuberculosis), Wester Moffat Hospital, Airdrie (tuberculosis and infectious diseases) and Thrashbush Home, Airdrie (geriatrics). Single quarters or a bungalow as married quarters are available at Longriggend Sanatorium. The officer appointed will be required to carry out duty at each of the 3 hospitals named and possession of a car will be an advantage.

Applications, stating age and giving full details of education, training and experience, together with the names of 3 referees, should be sent not later than 14 days from the date of publication of this advertisement to the Group Secretary, Board of Management Office, Hairmyres Hospital, East Kilbride.

COVENTRY. No. 20 GROUP HOSPITAL MANAGEMENT COMMITTEE invite applications for the following posts :—

Coventry and Warwickshire Hospital (354 Beds)

JUNIOR HOSPITAL MEDICAL OFFICER (ophthalmology), vacant now. (36 Beds.) Large Outpatient Department. Recognised for D.O. Previous experience desirable.

HOUSE OFFICER (ophthalmology), vacant now. Recognised for D.O. Post provides excellent experience in inpatient and outpatient work. (36 Beds.)

SENIOR HOUSE OFFICER (anæsthetics), vacant now. Duties at Coventry and Warwickshire Hospital (230 surgical beds) and Gulson Hospital (114 surgical beds.) Excellent experience in all types of general anæsthetics. Recognised for F.F.A.R.C.S. Resident.

Hospital of St. Cross (152 Beds)

CASUALTY AND ACCIDENT SURGEON, required now. To include duties in the Orthopædic Department. Salary £775–£1075 p.a. Resident.

SENIOR HOUSE OFFICER (general surgery), vacant 25th July. 78 surgical beds, including orthopædic. Recognised for F.R.C.S.

Applications to the Secretary, No. 20 Group Hospital Management Committee, Stoney Stanton-road, Coventry.

CROYDON. MAYDAY HOSPITAL. (618 Beds.) Locum Tenens SENIOR CASUALTY OFFICER (Junior Hospital Medical Officer grading) for period 5th July–9th August inclusive.

Applications, with full particulars, to—

GEORGE A. PAINES, Group Secretary,
Hospital Management Committee.
General Hospital, London-road, Croydon.

CROYDON. MAYDAY HOSPITAL. (618 Beds.) Croydon GROUP HOSPITAL MANAGEMENT COMMITTEE. CASUALTY OFFICER (Senior House Officer grade). Applications are invited for post which is now vacant. Recognised for Final F.R.C.S. examination. Particularly good for gaining experience in orthopædics and fracture work.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, Croydon.

CHICHESTER. ST. RICHARD'S HOSPITAL. Chichester GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of CASUALTY AND ADMISSION OFFICER (Senior House Officer grade; resident or non-resident.) This post is recognised under the F.R.C.S. regulations. Post vacant now. Salary in accordance with national scale.

Full particulars, together with names of 3 referees, should be addressed to the Surgeon-Superintendent as soon as possible.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. BLACK NOTLEY HOSPITAL, BRAINTREE, ESSEX. SENIOR HOUSE OFFICER for Surgical Tuberculosis Department at above Hospital. Recognised for F.R.C.S. Duties mainly concerned with genito-urinary tuberculosis, including 1 day a week at the London Hospital Genito-urinary Department.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. BLACK NOTLEY HOSPITAL, BRAINTREE, AND ESSEX COUNTY HOSPITAL, COLCHESTER. Applications invited for post of HOUSE SURGEON (first, second, third or pre-registration post) tenable for 6 months. Duties to include work in general surgical and gynæcological wards. Recognised for F.R.C.S. Salary as scale plus £50 p.a.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. ESSEX COUNTY HOSPITAL, COLCHESTER (19 gynæcological beds), COLCHESTER MATERNITY HOSPITAL (22 obstetric beds). HOUSE OFFICER (Male or Female), obstetric and gynæcological. First, second or pre-registration post; tenable for 6 months.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, 14, Pope's-lane, Colchester, Essex.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for the following post :—

Essex County Hospital, Colchester (189 Beds)

HOUSE OFFICER (surgical). First, second, third, or pre-registration post; tenable for 6 months.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for the following posts :—

Clacton and District Hospital, Clacton-on-Sea (58 Beds)

SENIOR HOUSE OFFICER (Resident Surgical Officer). Post tenable for 1 year.

SENIOR HOUSE OFFICER (Resident Casualty Officer) required temporarily during summer months to mid-September.

Applications, with copies of 3 testimonials, should be forwarded to the Group Secretary, 14, Pope's-lane, Colchester, Essex.

DARLINGTON MEMORIAL HOSPITAL. (210 Beds.) DARLINGTON DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON (resident) which post is recognised for the F.R.C.S. (Eng.). Salary in accordance with national scale.

Apply, giving age and references, to the undersigned forthwith.

G. W. BECKWITH, Group Secretary.

DERBY. DERBYSHIRE CHILDREN'S HOSPITAL. (86 Beds.) HOUSE SURGEON (pre-registration) or SENIOR HOUSE OFFICER, vacant now. Recognised for D.C.H.

Applications, with 2 names for reference, should be sent to the Secretary, No. 1 Hospital Management Committee, Babington-lane, Derby.

DERBY. DERBYSHIRE ROYAL INFIRMARY. (395 Beds. Recognised for the F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT REGISTRAR (ophthalmology) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 12th July, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DEWSBURY. STAINCLIFFE GENERAL HOSPITAL. (314 Beds.) HOUSE OFFICER (general medicine and pædiatrics), first, second, or third post, vacant 1st August, 1954, and tenable for 6 months. Recognised pre-registration appointment. Hospital has 68 adult acute medical and 34 pædiatric beds. It is recognised for the D.C.H.

Applications, with full particulars, to the Administrative Officer at the Hospital, quoting Ref. (L).

DORKING GENERAL HOSPITAL, Horsham-road, Dorking. (234 Beds.) REDHILL GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (surgical), vacant 1st August, 1954. Excellent general surgical experience.

Apply to the Medical Superintendent.

DONCASTER ROYAL INFIRMARY. (330 Beds. Recognised under the regulations for the Fellowship examination of the Royal College of Surgeons.) DONCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON. The post is approved for Pre-registration Service.

Applications, stating age, qualifications with dates, and nationality and accompanied by copies of 3 recent testimonials, should be forwarded to the Secretary to the Committee at the Doncaster Royal Infirmary.

DONCASTER ROYAL INFIRMARY. (330 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 12th July, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

DONCASTER ROYAL INFIRMARY. (330 Beds.) DONCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE PHYSICIAN. The post is approved for Pre-registration Service.

Applications, stating age, qualifications with dates and nationality, and accompanied by copies of 3 recent testimonials, should be forwarded to the Secretary to the Committee at the Doncaster Royal Infirmary.

DOVER, KENT. BUCKLAND HOSPITAL. Applications are invited for the appointment of HOUSE PHYSICIAN which will shortly become vacant at the above Hospital. Salary £425, £475 or £525 a year, less a deduction of £125 a year for residential emoluments.

Applications, stating age, qualifications, experience, and the names and addresses of 2 referees, should be made to the Group Secretary, South-East Kent Hospital Management Committee, "Ash-Eton," Radnor Park West, Folkestone.

DOVER. ROYAL VICTORIA HOSPITAL. Applications are invited for the post of SENIOR HOUSE SURGEON at the above Hospital. The post is recognised by the Royal College of Surgeons. Applicants should have held at least 3 house posts. Salary £745 a year. A deduction of £150 a year will be made for residential emoluments.

Applications, stating age, qualifications and the names and addresses of 2 referees, to the Group Secretary, "Ash-Eton," Radnor Park West, Folkestone.

DRIFFIELD, YORKSHIRE. EAST RIDING GENERAL HOSPITAL. (269 Beds.) Locum HOUSE SURGEON (Senior House Officer) required immediately for next few weeks. General surgical duties. Salary £13 a week. Residential accommodation available at the Hospital.

Apply Group Secretary, Westwood Hospital, Beverley, Yorks.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP. BIRMINGHAM REGION. Applications invited from registered practitioners, for following appointments :—

The Guest Hospital, Dudley (154 Beds)

SENIOR HOUSE OFFICER (resident), casualty. Post now vacant. Salary £670 p.a., less £150 p.a. in respect of residential emoluments.

SENIOR HOUSE OFFICER (Anæsthetist). Post vacant 5th July.

HOUSE OFFICER (surgical), pre-registration, vacant July.

Corbett Hospital, Stourbridge (106 Beds)

SENIOR HOUSE OFFICER (resident), casualty. Post now vacant. Salary £670 p.a., less £150 p.a. in respect of residential emoluments.

HOUSE OFFICER (surgical), pre-registration, vacant July.

Wordsley Hospital, near Stourbridge (478 Beds)

SENIOR HOUSE OFFICER (resident). Anæsthetist. Post now vacant. Salary £670 p.a., less £150 p.a. in respect of residential emoluments. In addition to general surgery, experience is available in gynæcology and there is a major Orthopædic Unit. Regional Plastic Surgery Unit at this Hospital.

Prestwood Sanatorium, near Stourbridge

JUNIOR HOSPITAL MEDICAL OFFICER (resident) at above Sanatorium, which consists of 200 Beds at Prestwood, 35 at Edge View and 60 at The Limes, and is for pulmonary tuberculosis. Post now vacant.

Applications, stating age, experience, with copies of 3 recent testimonials, to Group Secretary, The Guest Hospital, Dudley, Worcs.

EAST FIFE HOSPITALS BOARD OF MANAGEMENT. CRAIGTOUN MATERNITY HOSPITAL, ST. ANDREWS, AND ASSOCIATED HOSPITALS. Applications are invited for the post of RESIDENT OBSTETRICAL AND GYNÆCOLOGICAL REGISTRAR (58 obstetric beds, 6 gynæcological beds) which will become vacant on 1st October, 1954.

Apply, with names of 3 referees, to the Medical Superintendent, East Fife Hospitals Board of Management, 243A, High-street, Kirkcaldy.

EAST FIFE HOSPITALS BOARD. Senior House Officer ANÆSTHETIST (whole-time), non-resident, required immediately for duties at Kirkcaldy General Hospital (74 Beds) and at other hospitals in Fife as required.

Apply, giving names of 2 referees, to the Medical Superintendent, East Fife Hospitals Board of Management, 243A, High-street, Kirkcaldy.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. RESIDENT HOUSE PHYSICIAN for above Hospital. Post vacant 3rd August, 1954. 6 months appointment. Post recognised for pre-registration purposes.

Applications, stating age, qualifications, experience and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 17th July, 1954. Candidates selected for interview will be notified by 24th July, 1954.

EXETER. ROYAL DEVON AND EXETER HOSPITAL. THE EXETER AND MID-DEVON HOSPITALS MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER (surgical), Resident Surgical Officer. The post is recognised for the F.R.C.S. Vacant 31st August, 1954.

Applications, with copies of 2 recent testimonials, to the Hospital Secretary by 17th July, 1954.

GLASGOW ROYAL INFIRMARY. Senior House Officer in Orthopædics. Duties at above Infirmary.

Write, giving 3 names for reference, to the Secretary, Board of Management for Glasgow Royal Infirmary and Associated Hospitals, 135, Buchanan-street, Glasgow, C.1.

GLASGOW ROYAL INFIRMARY. Senior House Officer in Anæsthetics. Duties at above Infirmary.

Write, giving 3 names for reference, not later than 17th July, 1954, to the Secretary, Board of Management for Glasgow Royal Infirmary and Associated Hospitals, 135, Buchanan-street, Glasgow, C.1.

GLASGOW ROYAL INFIRMARY. Senior House Officers in Pathology (2 vacancies). Duties at Glasgow Royal Infirmary and other Hospitals under the authority of the Board.

Apply in writing not later than 16th July, 1954, giving 3 names for reference, to the Secretary, Board of Management for Glasgow Royal Infirmary and Associated Hospitals, 135, Buchanan-street, Glasgow, C.1.

EAST CUMBERLAND HOSPITAL MANAGEMENT COMMITTEE. Appointment of House Officers. Applications are invited for the following appointments: —

Cumberland Infirmary, Carlisle (340 Beds)

1 HOUSE OFFICER (" Specials "—E.N.T. and Eyes).

1 SENIOR HOUSE OFFICER (orthopædics).

Applications, with names of 2 referees, should be forwarded immediately to the Secretary, East Cumberland Hospital Management Committee, Cumberland Infirmary, Carlisle.

GRANTHAM AND KESTEVEN GENERAL HOSPITAL. (117 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT SURGICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 12th July, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

GRIMSBY GENERAL HOSPITAL. (226 Beds.) Grimsby HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER for Orthopædic, Fracture and Accident Service. Previous surgical and orthopædic experience would be an advantage. Post recognised for F.R.C.S. Excellent Medical Library facilities.

Applications should be sent immediately to the Hospital Secretary, Grimsby General Hospital.

GRIMSBY GENERAL HOSPITAL. (226 Beds.) Grimsby HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (gynæcological), Male or Female, for duties at the above-named Hospital and Scartho Road Infirmary, Grimsby. A Locum appointment would be considered.

Applications, with the names of 2 referees, to Hospital Secretary, Grimsby General Hospital.

GRIMSBY GENERAL HOSPITAL. (226 Beds.) Grimsby HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of JUNIOR (pre-registration) or SENIOR HOUSE OFFICER (surgical), vacant from 1st August, 1954.

Applications, with names of 2 referees, to Hospital Secretary, Grimsby General Hospital.

HALIFAX GENERAL HOSPITAL. (425 Beds.) House PHYSICIAN required. Approved pre-registration appointment.

Applications to the Group Secretary, Royal Halifax Infirmary, Halifax.

HALIFAX GENERAL HOSPITAL. (425 Beds.) Junior HOSPITAL MEDICAL OFFICER in Anæsthetics required. Opportunities for studying for D.A. Board-residence available.

Applications to Group Secretary, Royal Halifax Infirmary, Halifax.

HALIFAX. ROYAL HALIFAX INFIRMARY. (301 Beds.) HOUSE SURGEON (E.N.T. and ophthalmology) required. Post now vacant. Approved pre-registration appointment.

Applications to Group Secretary, Royal Halifax Infirmary, Halifax.

HALIFAX. ROYAL HALIFAX INFIRMARY. (301 Beds.) SENIOR HOUSE OFFICER in General Surgery required. Post vacant late July.

Applications to Group Secretary, Royal Halifax Infirmary, Halifax.

HALIFAX. ST. JOHN'S HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER at the above Hospital which has 382 Beds for geriatric cases and chronic sick patients. Good facilities for modern method of treating geriatric cases. Pathological Laboratory ; Physiotherapy and Occupational Therapy Departments situated at the Hospital.

Applications to the Group Secretary, Royal Halifax Infirmary, Halifax.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) SENIOR HOUSE OFFICER (casualty and orthopædic). Post vacant 1st August. National scale of salary.

Apply to Hospital Administrator.

HUDDERSFIELD HOSPITAL MANAGEMENT COM-MITTEE. Applications are invited from provisionally registered or registered medical practitioners for the post of HOUSE SURGEON to the Princess Royal Maternity Home (57 Beds), to commence duty on 1st August, 1954. The holder of the post, which is recognised for the D.Obst.R.C.O.G., will have access to the abnormal maternity and gynæcological beds at The Royal Infirmary. The Department is under the control of 2 Consultant Obstetricians and Gynæcologists. Salary in accordance with national scale.

Applications to be addressed to—

H. J. JOHNSON, Secretary to the Management Committee, The Royal Infirmary, Huddersfield.

HULL. KINGSTON GENERAL HOSPITAL. (447 Beds.) Applications are invited for the pre-registration appointment of HOUSE OFFICER (general surgery). Recognised for the F.R.C.S. examinations. Salary £425, £475, or £525 according to experience. The post is resident and tenable for 6 months. Vacant now.

Applications, with full particulars, to the Secretary, Hull A Group Hospital Management Committee.

HULL. KINGSTON GENERAL HOSPITAL. (447 Beds.) Applications are invited for the post of RESIDENT SENIOR HOUSE SURGEON (recognised for the F.R.C.S. examinations). There are 69 general surgical beds and some supervision is required of 17 gynæcological beds. Salary £745, less emoluments. Post now vacant.

Applications, with names of referees, to the Secretary, Hull A Group Hospital Management Committee.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for the appointment of HOUSE SURGEON (General—second post), to commence 5th August, 1954. Pre-registration post ; recognised under F.R.C.S. regulations.

Applications to Group Secretary, Hertford Group Hospital Management Committee, Hertford County Hospital, Hertford, Herts.

HOVE GENERAL HOSPITAL, Sussex. House Surgeon AND CASUALTY OFFICER (recognised for F.R.C.S.) required as soon as possible. Salary £525, less £125 p.a. for residential emoluments.

Applications, stating age, qualifications, experience and naming 2 referees, to the Administrative Officer.

HILLINGDON HOSPITAL, Uxbridge, Middlesex. PÆDIATRIC HOUSE PHYSICIAN (resident) for above Hospital. Duties include experience in Children's Medical Ward, Neonatal Unit and pædiatric outpatient clinics. Appointment recognised for D.C.H. Persons seeking pre-registration posts considered.

Apply, stating age, qualifications, nationality and experience, with copies of not more than 3 recent testimonials, to Medical Director by 12th July.

HILLINGDON HOSPITAL, Uxbridge, Middlesex. HOUSE SURGEON (resident) required for gynæcological duties at above Hospital. Previous gynæcological experience desirable but not essential. Post recognised for M.R.C.O.G. and vacant early September.

Apply, stating age, nationality, qualifications, experience and enclosing copies of not more than 3 recent testimonials, to Medical Director by 12th July.

HITCHIN HOSPITALS, Hitchin, Hertfordshire. Resident SENIOR HOUSE OFFICER (casualty) for duty with the Accident Service and as Orthopædic House Surgeon, required, for 6 months in the first instance, on 26th July, 1954.

Applications, stating age, nationality, qualifications, and experience, together with copies of 3 recent testimonials, to be sent immediately to the Secretary, Luton and Hitchin Group Hospital Management Committee, St. Mary's Hospital, Luton, Beds.

ILFORD, ESSEX. KING GEORGE HOSPITAL. Ilford AND BARKING GROUP HOSPITAL MANAGEMENT COMMITTEE. There will be vacancies for the following at the above Hospital.

HOUSE SURGEON—29th July, 1954.

HOUSE SURGEON—20th August, 1954.

Post or pre-registration.

Applications, giving full particulars and accompanied by testimonials, to be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Deputy Group Secretary.

King George Hospital, Ilford.

ILFORD. KING GEORGE HOSPITAL. (General Hos-pital—215 Beds.) ORTHOPÆDIC DEPARTMENT. ILFORD AND BARKING GROUP HOSPITAL MANAGEMENT COMMITTEE. There is a vacancy for a SENIOR HOUSE OFFICER. Salary will be at the rate of £745 p.a., less emoluments.

Applicants should have been registered not less than 1 year and should send applications, accompanied by copies of 3 testimonials, to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Deputy Group Secretary.

King George Hospital, Ilford.

IPSWICH. BOROUGH GENERAL HOSPITAL, Heath-road. (285 Beds.) Applications are invited for the post of HOUSE PHYSICIAN (pre-registration post) to General Physician. Vacant on 30th July, 1954.

Applications, giving details of qualifications, age, nationality, &c., together with copies of 3 recent testimonials, to the Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (resident Anæsthetist). The post, which is normally of 1 years duration, is recognised for the D.A. and the F.F.A.R C.S. examinations.

Applications, stating age, nationality, together with recent testimonials, to Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL. (360 Beds.) Applications are invited for the post of SENIOR HOUSE SURGEON to the Fracture and Orthopædic Department. The post is graded Senior House Officer and is recognised for the F.R.C.S. examinations. The Department has 2 Consultants, about 60 Beds and a large outpatients attendance and offers a wide experience.

Applications, stating age, nationality, experience and copies of 3 recent testimonials, to the Hospital Secretary.

IPSWICH. EAST SUFFOLK AND IPSWICH HOS-PITAL. (360 Beds.) Applications are invited for the post of HOUSE SURGEON to the Fracture and Orthopædic Department. Approved pre-registration post.

Applications, with copies of recent testimonials, to the Hospital Secretary.

INVERNESS HOSPITALS BOARD OF MANAGEMENT. 3 HOUSE SURGEONS (general surgery) required for 6 months from 1st August, 1954. Royal Northern Infirmary, Inverness, 2 posts ; Raigmore Hospital, Inverness, 1 post. Whitley Council salary and conditions of service. Posts recognised for pre-registration.

Applications, with references, to Medical Superintendent.

INVERNESS HOSPITALS BOARD OF MANAGEMENT. ROYAL NORTHERN INFIRMARY, INVERNESS. HOUSE SURGEON (E.N.T. and eyes), required for 6 months from 1st August, 1954. Whitley Council salary and conditions of service. Post recognised for pre-registration.

Applications, with references, to Medical Superintendent.

INVERNESS HOSPITALS BOARD OF MANAGEMENT. ROYAL NORTHERN INFIRMARY, INVERNESS. HOUSE SURGEON (gynæcology) required for 6 months from 1st August, 1954. Whitley Council salary and conditions of service. Post recognised for pre-registration.

Applications with references to Medical Superintendent.

INVERNESS HOSPITALS BOARD OF MANAGEMENT. RAIGMORE HOSPITAL, INVERNESS. 2 ORTHOPÆDIC HOUSE SURGEONS required for 6 months from 1st August, 1954. Whitley Council salary and conditions of service. Posts recognised for pre-registration.

Applications, with references, to Medical Superintendent.

INVERNESS HOSPITALS BOARD OF MANAGEMENT. RAIGMORE HOSPITAL, INVERNESS. 2 HOUSE PHYSICIANS required for 6 months from 1st August, 1954. Whitley Council salary and conditions of service. Posts recognised for pre-registration.

Applications, with references, to Medical Superintendent.

IRVINE, AYRSHIRE. CENTRAL HOSPITAL. Board of MANAGEMENT FOR NORTHERN AYRSHIRE HOSPITALS. Applications are invited from registered medical practitioners for the post of ASSISTANT BACTERIOLOGIST AND CLINICAL PATHOLOGIST (Junior Hospital Medical Officer) at the County Laboratory, at above Hospital, vacant now. National terms. Applicants should have had some experience in bacteriology and preferably also in hæmatology.

Apply immediately, enclosing copies of 3 testimonials, to Area Medical Superintendent, 1, Hill-street, Kilmarnock.

LEAMINGTON SPA. WARNEFORD GENERAL HOSPITAL. (207 Beds.) SOUTH WARWICKSHIRE HOSPITAL GROUP. Applications invited for post of CASUALTY OFFICER (Senior House Officer), Male or Female, resident or non-resident. Post vacant and suitable for one reading for higher qualification, affording contact with all Specialist Units in Hospital.

Applications, with names and addresses of 3 referees, to Hospital Secretary.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following SENIOR REGISTRAR posts :—

Anæsthetics

Duties at the Thoracic Surgical Units of the General Infirmary, Leeds, and Pinderfields Hospital, Wakefield. This post is for a period of 1 year in the first instance.

Child Psychiatry (Training Post in Child Psychiatry)

The basic duties will be 5 sessions in the University of Leeds, Department of Psychiatry (Children's Section) which is associated with the Leeds General Infirmary. Additional duties at Meanwood Park Colony, Leeds (mental deficiency) and/or St. James's Hospital, Leeds (adult neurosis). Residential accommodation available at Meanwood Park for a single person. Candidates must hold the D.P.M. or equivalent qualification.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than Thursday, 15th July, 1954.

LEEDS REGIONAL HOSPITAL BOARD invites applications for the following REGISTRAR posts :—

Anæsthetics

Hull A, Hull B and East Riding Groups. Recognised for the F.F.A. R.C.S. Duties may include thoracic anæsthesia. (Non-resident.)

Dermatology

Duties mainly at the Bradford Royal Infirmary (40 dermatological beds). Large Outpatient Department—5000 new cases annually. (Resident.)

General Surgery

Halifax General Hospital (50 surgical beds) and Halifax Royal Infirmary (60 orthopædic beds). Duties approximately divided between general and orthopædic surgery. (Preferably resident.)

Infectious Diseases

(*a*) Leeds Road Hospital, Bradford (120 I.D. beds). (Resident.)

(*b*) Castle Hill Hospital, Cottingham (208 I.D. beds). (Resident.)

Orthopædic Surgery

(*a*) Woodlands Orthopædic Hospital, Rawdon (100 Beds), and Orthopædic Outpatient Department, Bradford Royal Infirmary. Offers excellent training in all branches of accident and orthopædic surgery. (May be non-resident.)

(*b*) Royal Bath Hospital, Harrogate (40 orthopædic beds), duties in connection with the Regional Rheumatism Scheme. (Resident.)

Otolaryngology

(*a*) York County and City Hospitals (30 E.N.T. beds). (Resident or non-resident.)

(*b*) Hull Royal Infirmary and associated hospitals (50 E.N.T. beds). (Non-resident.)

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, not later than 8th July, 1954.

LEEDS REGIONAL HOSPITAL BOARD. Short-term LOCUM TENENS appointments in the Registrar grade are constantly available at hospitals in the area of the Board, particularly in the specialties of anæsthetics, general medicine, general and orthopædic surgery, and psychiatry.

Interested practitioners, suitably experienced, should communicate with the Secretary, Joint Registrars Committee, Park-parade, Harrogate.

LEEDS REGIONAL HOSPITAL BOARD AREA. Medical ACT, 1950. RESIDENT HOUSE OFFICER posts. Recognised pre-registration House posts will be available for the 6 months commencing 1st August, 1954, in the following hospitals approved under the Medical Act, 1950.

City Hospital, York (178 Beds)
1 General Surgical.
1 Surgical (general surgery and gynæcology).
Both recognised for F.R.C.S.

Hull Royal Infirmary (149 Beds)
1 Medical.
1 General Surgical (recognised for F.R.C.S.).

Hull Royal Infirmary (Sutton) (102 Beds)
1 Medical.
1 General Surgical (recognised for F.R.C.S.).

Western General Hospital, Hull (543 Beds)
1 Medical.
1 Surgical (general surgery, gynæcology and radiotherapy).

Kingston General Hospital, Hull (398 Beds)
1 Medical.
1 General Surgical.

Victoria Hospital for Children, Hull (143 Beds) (all posts recognised for D.C.H.)
1 Medical.
1 Surgical (general surgery and orthopædic).

Westwood Hospital, Beverley (202 Beds)
1 General Surgical (recognised for F.R.C.S.).

East Riding Hospital, Driffield (249 Beds)
1 Medical (general medical and pædiatric).
1 Surgical (general surgery, gynæcology and E.N.T.). Recognised for F.R.C.S.

Pontefract General Infirmary (98 Beds)
1 Medical (general medical and pædiatric).
1 General Surgical.

Clayton Hospital, Wakefield (200 Beds)
1 Surgical (general surgery and gynæcology). Recognised for F.R.C.S.

General Hospital, Wakefield (158 Beds)
1 Medical (general medical and geriatrics).

Pinderfields Hospital, Wakefield (663 Beds)
1 General Surgical.
1 Surgical (orthopædic surgery).

General Hospital, Batley (99 Beds)
1 Surgical (general surgery and E.N.T.).
1 Surgical (orthopædic and ophthalmology).

Staincliffe General, Dewsbury (314 Beds)
1 Medical (general medical and dermatology).
1 Medical (general medical and pædiatric).
1 Surgical (general surgery, orthopædic and E.N.T.).

Huddersfield Royal Infirmary (304 Beds)
1 Medical (general medical and pædiatric).
1 Surgical (general surgery and orthopædic). Recognised for F.R.C.S.

Princess Royal Maternity, Huddersfield (59 Beds)
1 Midwifery (recognised by R.C.O.G.).

Royal Halifax Infirmary (301 Beds)
1 Midwifery (recognised by R.C.O.G.).

Halifax General Hospital (425 Beds)
1 Medical.
1 Medical (pædiatric).
2 General Surgical (recognised for F.R.C.S.).

Bradford Royal Infirmary (507 Beds)
1 Medical.
2 General Surgical (recognised for F.R.C.S.).

St. Luke's Hospital, Bradford (828 Beds)
2 Medical.
1 Medical (general medical and dermatology).
1 Surgical (genera surgery and casualty).
1 General Surgical.
1 Surgical (general surgery and plastic).
2 Surgical (orthopædic and casualty).
All surgical posts recognised for F.R.C.S.

Keighley Victoria Hospital (144 Beds)
1 Medical (general medical, pædiatric and dermatology).
1 Surgical (general surgery, orthopædic and E.N.T.). Recognised for F.R.C.S.

General Hospital, Otley (170 Beds)
1 Surgical (general surgery and orthopædic).

Seacroft Hospital, Leeds (80 surgical beds)
1 Surgical (general surgery, E.N.T. and ophthalmology).

Harrogate General Hospital (249 Beds)
2 Medical.

Candidates should express, where applicable, their preference for medical, surgical or midwifery posts within the same hospital on the application form.

Candidates wishing to apply for posts at more than 1 hospital should complete a separate form in respect of each hospital.

Application forms can be obtained from the Senior Administrative Medical Officer, Leeds Regional Hospital Board, Park-parade, Harrogate, or from the Dean, The School of Medicine, Thoresby-place, Leeds, 2, and should be returned to either of the above-named as soon as possible. Application may be made in advance of results of final examination.

LEEDS A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER (anæsthetics) for duties mainly at St. James's Hospital. The appointment, which is recognised for the D.A. and the F.F.A. R.C.S., will be for a period of 1 year, and the salary will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs—namely, £745 p.a., with an appropriate deduction in respect of board, lodging, and other services provided.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.
Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS (near). WOODLANDS (ORTHOPÆDIC) HOSPITAL, RAWDON, near LEEDS. (92 Beds.) SENIOR HOUSE SURGEON required for Orthopædic Hospital at Rawdon. The post will be adjoined to the Casualty and Orthopædic Unit at the Royal Infirmary, Bradford, and offers excellent opportunities for a person interested in orthopædic work. Salary £745 p.a.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary, Bradford Royal Infirmary.

LEEDS. THE UNITED LEEDS HOSPITALS. Applications are invited for the post of REGISTRAR to the Department of Surgery of this Teaching Hospital Group. The post is non-resident and will be for 1 year in the first instance.

Applications, stating age, qualifications and previous experience, together with the names of 3 referees, are to be forwarded to the Sub-Dean, School of Medicine, Leeds, 2, not later than 17th July, 1954.

LEEDS. UNITED LEEDS HOSPITALS. Applications are invited for the post of SENIOR HOUSE OFFICER or HOUSE OFFICER (pre-registration post) to the Department of Urology at the General Infirmary at Leeds. The post, which is resident, will be for a period of 6 months in the first instance.

Applications, stating age, qualifications and previous posts with dates, should be forwarded to the undersigned not later than 7th July, 1954.

J. ARNOLD TUNSTALL, Secretary to the Board.

The General Infirmary, Leeds, 1.

LANCASTER MOOR HOSPITAL, Lancaster. (Regional MENTAL HOSPITAL.) Applications invited for post of RESIDENT or NON-RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER (Male or Female). Preference to candidates who have held house appointments at general hospitals. Previous experience in psychiatry not essential. Unfurnished flat in Hospital grounds for married applicant if required; furnished quarters for single person. Modern methods of investigation and treatment carried out. Outpatients clinics (3) at hospitals in the area, staffed from Hospital.

Applications, stating age, qualifications and experience, and names of 2 referees, to be sent to the Medical Superintendent.

LINCOLN. BRACEBRIDGE HEATH HOSPITAL. (For Mental Diseases 1290 Beds.) Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER (resident or non-resident), Male or Female (married or single). Salary and terms of service as laid down by the Ministry of Health. There is residential accommodation for a single or married officer. There will be scope for learning the use of modern psychiatric methods in the wards. Previous psychiatric experience is not essential. The appointment is subject to the provisions of the National Health Service superannuation regulations.

Applications, with names of 2 referees, should be forwarded as soon as possible to the Medical Superintendent, Bracebridge Heath Hospital, near Lincoln.

LINCOLN. COUNTY HOSPITAL. (200 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER in Surgery and E.N.T.

Applications, giving full particulars, should be addressed to—
R. W. HOWICK, Group Secretary.

LINCOLN. ST. GEORGE'S HOSPITAL. (178 Beds.) Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident) to assist the Resident Medical Officer at the above Hospital which has medical, surgical, orthopædic, and geriatric beds.

Applications, giving full particulars, together with 3 names for reference, should be addressed to—
R. W. HOWICK, Group Secretary.

County Hospital, Lincoln.

LLANELLY HOSPITAL. (166 Beds.) **Glantawe Hospital MANAGEMENT COMMITTEE.** Applications are invited from registered medical practitioners for the 2 posts of JUNIOR HOSPITAL MEDICAL OFFICER (resident) for work in the Surgical Unit of 75 Beds. The posts offer excellent experience in general surgery.

Applications, stating age, experience and qualifications, to be addressed to the Hospital Secretary, Llanelly Hospital, Marble Hall-road, Llanelly.

LLANELLY HOSPITAL. Glantawe Hospital Management COMMITTEE. Applications are invited from registered medical practitioners for the resident appointment of JUNIOR HOSPITAL MEDICAL OFFICER in the E.N.T. Department of the above Hospital. Salary £775–£50–£1075.

Applications, with full details of experience, qualifications and age, together with the names of 2 referees, should be sent to the Hospital Secretary, Llanelly Hospital, Llanelly, Carms.

LLANELLY HOSPITAL, Llanelly, Carmarthenshire. (164 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER for duty in the E.N.T., Ophthalmic and Gynæcological Departments.

Full particulars, stating age, qualifications and experience, should be addressed to the Hospital Secretary, Llanelly Hospital, Marble Hall-road, Llanelly.

LLWYNYPIA HOSPITAL, Llwynypia, Rhondda. (50 acute medical beds; geriatric beds: serving area population of 112,000.) SENIOR HOUSE OFFICERS (medical). Persons appointed will have part responsibility for the Group Infectious Disease Hospital.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

LIVERPOOL, 20. BOOTLE HOSPITAL. Casualty Officer (Junior Hospital Medical Officer grade) required as soon as possible.

Applications to Secretary, North Liverpool Hospital Management Committee.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for a post of REGISTRAR in Psychiatry for the period 1st October, 1954–30th September, 1955. Reappointment for a second year will be considered without the need for further application.

Apply by 17th July, 1954, on form obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. LIVERPOOL EAR, NOSE AND THROAT INFIRMARY. Applications are invited for a Locum post as REGISTRAR in Otorhinolaryngology for the period to 30th September, 1954. The post may be resident or non-resident.

Apply as soon as possible on form obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for a post of REGISTRAR in Dermatology for the period 1st October, 1954–30th September, 1955. Reappointment for a second year will be considered without the need for further application.

Apply by 17th July, 1954, on form obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LICHFIELD (near). ST. MATTHEW'S HOSPITAL, BURNTWOOD, near LICHFIELD, STAFFS. Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER (psychiatry) at the above Hospital (1300 mental beds). Resident accommodation available.

Applications, with full details and copies of recent testimonials, to Medical Superintendent.

LOWESTOFT AND NORTH SUFFOLK HOSPITAL, LOWESTOFT. (99 Beds.) Applications are invited for the appointment of SENIOR HOUSE SURGEON. Salary £745 p.a., less £150 for residential emoluments. The Hospital is staffed by Consultant General Surgeons and visiting Consultants in all specialties from the Norfolk and Norwich Hospital.

Applications, stating age, qualifications and experience with names of 2 referees, to Hospital Secretary, immediately.

LUTON AND DUNSTABLE HOSPITAL, Luton, Bedfordshire. Applications are invited for the post of HOUSE SURGEON, vacant 9th July, 1954. Recognised as pre-registration post and for F.R.C.S. The appointment will be for 6 months in the first instance.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Secretary by 5th July.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE SURGEON. 6 months appointment. Post vacant July, 1954. Salary at the rate of £425, £475 to £525 according to experience. A deduction at the rate of £125 a year is made in respect of board and lodging and other services provided.

Applications should be forwarded as soon as possible to the Administrative Officer at the Hospital.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RECEIVING-ROOM OFFICER. Post now vacant. Salary £745 a year, with deduction at present of £150 a year for residential emoluments.

Applications to Administrative Officer at Hospital as soon as possible.

MANSFIELD. HARLOW WOOD ORTHOPÆDIC HOSPITAL. (328 Beds. Recognised for the F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (orthopædics) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 12th July, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

MANCHESTER ROYAL EYE HOSPITAL. United MANCHESTER HOSPITALS. Applications are invited for post of SENIOR HOUSE OFFICER. Salary £670 p.a., less £130 p.a. for residential emoluments.

Application forms may be obtained from the undersigned.
H. R. NORTH, General Superintendent.

MANCHESTER, 19. DUCHESS OF YORK HOSPITAL FOR BABIES. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered practitioners (Male or Female) for the post of HOUSE PHYSICIAN for 6 months from 1st August, 1954. The Hospital is associated with Manchester University for teaching purposes.

Applications, with copies of 3 testimonials, to be forwarded to the Administrative Officer of the Hospital by 10th July, 1954.

MANCHESTER, 19. DUCHESS OF YORK HOSPITAL FOR BABIES. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered practitioners for the post of SENIOR HOUSE OFFICER (pædiatrics) at the above Hospital. The post is resident and will be vacant on 24th August, 1954.

Applications, stating age, qualifications, present post, experience, and names of 2 referees, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20, within 7 days of the appearance of this advertisement.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the immediate vacancy of RESIDENT REGISTRAR in General Surgery. The post is newly created and the duties will be with the Stockport and Buxton Hospital Management Committee, resident at Stepping Hill Hospital, Stockport.

Applications, stating age, experience, and qualifications, together with copies of 2 testimonials, to be addressed to the undersigned forthwith. H. G. PRICE, Group Secretary.

59B, Shaw-heath, Stockport, Cheshire.

MANCHESTER REGIONAL HOSPITAL BOARD. SALFORD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of NON-RESIDENT REGISTRAR to the Neurosurgical Departments at Salford Royal Hospital and the Royal Manchester Children's Hospital. In addition to adult work, the post offers exceptional opportunities for experience in pædiatric neurosurgery. The post is vacant from 1st August, 1954.

Applications to the Group Secretary, Salford Royal Hospital, Salford, 3, to be received not later than 10th July, 1954.

MANCHESTER REGIONAL HOSPITAL BOARD. SALFORD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of NON-RESIDENT REGISTRAR in E.N.T. Surgery to the Salford and West Manchester Groups of hospitals, with main duties at Salford Royal and Park Hospitals.

Applications, together with copies of 2 recent testimonials, to be forwarded to the Group Secretary at Salford Royal Hospital, Salford, 3, immediately.

MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for a post of SURGICAL REGISTRAR (resident or non-resident) at the North Lonsdale Hospital, Barrow-in-Furness. Post recognised for F.R.C.S.

Applications to Group Secretary, Barrow and Furness Hospital Management Committee, 52, Paradise-street, Barrow-in-Furness, not later than 10th July, 1954.

MANCHESTER REGIONAL HOSPITAL BOARD. RESIDENT REGISTRAR (obstetrics/gynæcology) required early September in the Blackburn and District Hospital Group. Recognised post for M.R.C.O.G. based on Queen's Park Hospital, Blackburn (a general hospital with 83 obstetric/gynæcological beds) with duties at Blackburn Royal Infirmary and Accrington Victoria Hospital.

Application forms obtainable from and returnable to the Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

MANCHESTER REGIONAL HOSPITAL BOARD. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. The Board invite applications from registered practitioners for the post of REGISTRAR (pædiatrics) at the Duchess of York Hospital for Babies, vacant on 1st September, 1954.

Applications, stating age, qualifications, present post, experience, and names of 2 referees, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20, within 7 days of the appearance of this advertisement.

MANCHESTER REGIONAL HOSPITAL BOARD. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. The Board invite applications from registered practitioners for the post of RESIDENT MEDICAL OFFICER (Registrar grade) at the Wythenshawe Hospital.

Applications, stating age, qualifications, present post, experience, and names of 2 referees, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20, within 7 days of the appearance of this advertisement.

MANCHESTER REGIONAL HOSPITAL BOARD. REGISTRAR (resident or non-resident) in General Medicine in the Bury and Rossendale Hospital Centre, based at Bury General Hospital.

Apply, giving full particulars and names of 2 referees, to—
H. WILKINSON, Group Secretary.

Bury General Hospital, Bury.

MANCHESTER, 20. WITHINGTON HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for 2 RESIDENT CLINICAL PATHOLOGIST posts (Senior House Officer grade), vacancies occur on 1st August and 30th August, 1954, respectively. Previous experience in pathology not essential, the posts affording opportunities for gaining experience in all branches of clinical pathology.

Applications, stating age, qualifications, present post, experience, and names of 2 referees, to be forwarded immediately to—
A. H. KEATES, Group Secretary.

Withington Hospital, Manchester, 20.

MANCHESTER, 20. WITHINGTON HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (medical) becoming vacant on 1st August, 1954.

Applications, stating age, qualifications, present post, experience and the names of 2 referees, to be forwarded to the Group Secretary at the Hospital as soon as possible.

MANCHESTER, 20. WITHINGTON HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (surgical) including casualty duties, becoming vacant on 24th August, 1954. The post is fully recognised by the Royal College of Surgeons. Possession of primary F.R.C.S. an advantage as the post is eminently suitable for a person taking the Final F.R.C.S. The Hospital is recognised by the Manchester University for the teaching of undergraduate surgical students.

Applications, stating age, qualifications, nationality, present post, experience, and the names of 2 referees, to be forwarded to the Group Secretary at the Hospital as soon as possible.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for the post of REGISTRAR (resident). Tenable for 12 months, subject to renewal. Previous experience in ophthalmology essential. The terms and conditions of service for hospital medical and dental staffs will apply.

Application forms may be obtained from the undersigned.
H. R. NORTH, General Superintendent.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. REGISTRAR to the Department of Cardiology, to commence on 7th August, 1954. Whole-time non-resident post, tenable for 12 months, renewable for a further 12 months.

Applications to be made on forms obtainable from the undersigned and to be returned not later than 14th July, 1954.
G. H. TAYLOR, Secretary.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. SENIOR REGISTRAR to the Department of Psychiatry, to commence as soon as possible. Applicants must have held house appointments and possess a higher qualification. Whole-time non-resident appointment for 12 months, renewable. The successful applicant will be expected to participate in the teaching of the department and engage in research work. He will also be required to undertake duties in connection with a small unit shortly to be opened in 1 of the Mental Hospitals in the Region.

Applications to be made on forms obtainable from the undersigned and to be returned not later than 14th July, 1954.
F. J. CABLE, Secretary to the Board of Governors.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. SENIOR HOUSE OFFICER (medical) to commence on 1st August, 1954. Whole-time resident post for 6 months, renewable for a second and possibly a third 6 months, at a salary of £670 p.a., with a deduction of £130 p.a. for residence. The successful applicant will be attached to the Rheumatism Research Centre but will have some general duties as Deputy Resident Medical Officer.

Applications to be made on forms obtainable from the undersigned and to be returned not later than 14th July, 1954.
G. H. TAYLOR, Secretary.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. 1 SENIOR HOUSE OFFICER (pædiatrics) required, post vacant early September, 1954. Hospital recognised for training for Diploma in Child Health.

Forms from Secretary.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—433 Beds.) HOUSE OFFICER (general surgery) required, pre- or post-registration. Post vacant 18th July, 1954.

Forms from Secretary.

MARKET DRAYTON (near), SHROPSHIRE. CHESHIRE JOINT SANATORIUM. (305 Beds.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. RESIDENT MEDICAL OFFICER (Junior Hospital Medical Officer or Senior House Officer, according to experience). The post offers exceptional experience in the treatment of pulmonary tuberculosis.

Applications to the Medical Superintendent at the Sanatorium.

MEXBOROUGH. MONTAGU HOSPITAL. (175 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 12th July, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

MID-GLAMORGAN HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following Medical staff appointments, vacant on the dates stated :—

Neath General Hospital (412 Beds)
HOUSE SURGEON (E.N.T. and ophthalmology); immediately.
HOUSE SURGEON; 1st August, 1954.
HOUSE PHYSICIAN; 1st August, 1954.
HOUSE PHYSICIAN (obstetrics and gynæcology); 24th August, 1954.

Port Talbot General Hospital, Hospital-road, Port Talbot (85 Beds) (in association with Neath General Hospital)
SENIOR HOUSE OFFICER (general medicine); immediately.

Bridgend General Hospital, Quarella-road, Bridgend (364 Beds)
SENIOR HOUSE OFFICER (pædiatrics); 1st August, 1954.
HOUSE SURGEON (obstetrics and gynæcology); 1st August 1954.
HOUSE SURGEON; 1st August, 1954.
HOUSE SURGEON (orthopædic and traumatics); 1st August, 1954.
HOUSE PHYSICIAN; 1st August, 1954.

Neath General Hospital and Bridgend General Hospital are recognised for the principal Diplomas and are both approved by the General Medical Council for Pre-registration Service under Section 2 of the Medical Act, 1950.

Applications, naming 2 referees, to be addressed to the Group Secretary of the Committee, 8, Wind-street, Neath.

NORTHAMPTON. ST. CRISPIN HOSPITAL, Duston, NORTHAMPTON. (1250 Beds.) SENIOR HOUSE OFFICER required. Salary according to national scale. A well-appointed flat is available at the Hospital at moderate rental. The Hospital is approved for training for the D.P.M. of the Conjoint Board and facilities are available in child psychiatry and out-patient clinics locally, and in neurology (at Oxford). There is a modern Admission Unit and an annual admission-rate of over 600 patients annually. Regular case conferences are held.

Applications, giving full details and names of 3 referees, to be sent to the Physician-Superintendent at the Hospital within 14 days.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the appointment of SENIOR HOUSE OFFICER to the Department of Obstetrics and Gynæcology. The appointment will be for 1 year of which 6 months will be spent in obstetrics and 6 months in gynæcology. The successful candidate will be resident at the Princess Mary Maternity Hospital and the Royal Victoria Infirmary respectively. The salary will be at the rate of £745 p.a.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.
Royal Victoria Infirmary, Newcastle upon Tyne, 1.

NEWCASTLE REGIONAL HOSPITAL BOARD.

Newcastle upon Tyne Hospital Management Committee

SENIOR REGISTRAR OPHTHALMOLOGIST (whole-time). Duties primarily at Newcastle Eye Hospital (34 Beds) and Walker Annexe (20 Beds). Single accommodation available, but successful applicant may live out, to be resident in Newcastle, and take turn in resident duty in Hospital. Appointment for 1 year in the first instance, but available for 4 years, subject to review each year. Preference will be given to holders of D.O. or D.O.M.S. Salary £1100–£1400 p.a.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

Newcastle General Hospital, Department of Psychological Medicine

SENIOR REGISTRAR (whole-time) in the above Department, which is under the clinical direction of the Professor of Psychological Medicine at the University of Durham. Appointment for 1 year only, commencing 1st October, 1954. Salary £1100–£1400 p.a.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Regional Psychiatrist, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

Sunderland Area Hospital Management Committee

Locum SENIOR REGISTRAR PHYSICIAN (Geriatric Department), Sunderland General Hospital. Appointment for approximately 6 months. Salary £22 per week.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 7 days.

Cherry Knowle Hospital, Ryhope, Sunderland (810 Beds)

Locum Tenens SENIOR REGISTRAR and REGISTRAR PSYCHIATRISTS required for the above Hospital for at least 2 months. Accommodation available. Salary £22 per week and £16 per week respectively.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Regional Psychiatrist, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 7 days.

Newcastle upon Tyne Hospital Management Committee

REGISTRAR CHEST PHYSICIAN (whole-time) required at Walker Gate Hospital, with duties in a chest clinic. A furnished house is available in the hospital grounds at a nominal rental. Appointment for 1 year in the first instance and may be renewed for a further year. Salary £850–£965 p.a.

North West Durham Hospital Management Committee

REGISTRAR PHYSICIAN for Medical Clinic No. 1 at Shotley Bridge Hospital. Appointment for 1 year in the first instance and may be renewed for a second year. Salary £850–£965 p.a.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Senior Administrative Medical Officer, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

St. Luke's Hospital, Middlesbrough (540 Beds)

REGISTRAR PSYCHIATRIST (whole-time), resident. Furnished flat available. Appointment for 1 year in the first instance and may be renewed for a further period. Salary £850–£965 p.a. Previous experience in psychiatry desirable, but not essential. A large amount of outpatient work (including children) is carried out from this Hospital. There is also an active Electroencephalographic Department. Arrangements can be made for the person appointed to take the necessary courses of study for the Durham Diploma in Psychological Medicine. Further particulars regarding the appointment may be obtained from the Physician-Superintendent.

St. George's Hospital, Morpeth (1210 Beds)

REGISTRAR PSYCHIATRIST (whole-time) resident (single accommodation only available). Salary £850–£965 p.a. Appointment for 1 year in the first instance and may be renewed for a further period. Arrangements can be made for the person appointed to take the necessary course of study for the University of Durham Diploma in Psychological Medicine.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Regional Psychiatrist, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days.

Winterton Hospital, Sedgefield (2030 Beds)

Locum Tenens REGISTRAR PSYCHIATRIST required for the above Hospital for at least 2 months. Single accommodation available. Salary £16 per week.

Applications, together with names and addresses of referees (preferably), or testimonials, to a total of 3, to be sent to the Regional Psychiatrist, "Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 7 days.

NEWCASTLE GENERAL HOSPITAL. (861 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. The resident post of SENIOR HOUSE OFFICER (Male), Urological Unit, becomes vacant on 1st August, 1954, and is tenable for 12 months.

Applications should be addressed to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, together with 1 copy of 2 recent testimonials by 10th July, 1954.

NOTTINGHAM AND MIDLAND EYE INFIRMARY. Required, SENIOR HOUSE OFFICER for the above Hospital. Duties to commence on or about 9th August. Salary £745 p.a., less a deduction of £150 for residential emoluments.

Applications, stating age, qualifications and experience, together with testimonials, to be sent to—

HENRY M. STANLEY, Group Secretary.

General Hospital, Nottingham.

NOTTINGHAM CHILDREN'S HOSPITAL. (136 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON (post recognised for pre-registration), which is vacant immediately. The post is tenable for 6 months.

Applications, with copies of 2 testimonials, should be sent to the Secretary, Nottingham Children's Hospital, Chestnut-grove, Nottingham.

NOTTINGHAM CITY HOSPITAL. (804 Beds.) Applications are invited for the post of HOUSE PHYSICIAN, vacant 12th August, 1954. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent immediately to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM CITY HOSPITAL. (804 Beds.) Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer), vacant 8th July. The post is recognised for the D.A. and the F.F.A.R.C.S.

Applications, stating age, nationality and qualifications, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered general practitioners for the post of THIRD CASUALTY OFFICER (Senior House Officer grade). Salary (less £150 emoluments) and conditions of service in accordance with those laid down by the Ministry. Duties to commence as soon as possible. This post offers wide experience of casualty work. The Staff establishment requires only 1 night in 3 emergency work, and off duty permits time for study for higher examinations.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

General Hospital, Nottingham. HENRY M. STANLEY.

NOTTINGHAM GENERAL HOSPITAL. 2 Resident HOUSE SURGEONS required (Male or Female, also open to pre-registration candidates) at the above Hospital; duties to commence as soon as possible. Salary and conditions of service in accordance with published regulations. The appointment is for a term of 6 months.

Applications, stating age, qualifications, and experience, to be sent to HENRY M. STANLEY, Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Required, SENIOR SURGICAL HOUSE OFFICER for the above Hospital, duties to commence at beginning of July, 1954. Salary (less £150 residential emoluments) and conditions of service in accordance with those laid down by the Ministry.

Applications, stating age, qualifications and experience together with copies of testimonials, to be sent to—

General Hospital, Nottingham. HENRY M. STANLEY.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR ORTHOPÆDIC AND FRACTURE HOUSE OFFICER. (Locum Tenens considered.) The post offers exceptional experience in traumatic and orthopædic surgery. Duties to commence as soon as possible. Salary and conditions of service in accordance with Ministry regulations. If resident £150 deducted for emoluments.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners (Male or Female—locum tenens considered) for the post of RESIDENT SENIOR ANÆSTHETIC HOUSE OFFICER; duties to commence as soon as possible. Terms and conditions of service in accordance with published regulations of the Ministry of Health. £150 deducted for residential emoluments.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to—

HENRY M. STANLEY, Group Secretary.

NEWPORT, I.W. ST. MARY'S HOSPITAL. (360 Beds.) ISLE OF WIGHT GROUP HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER required as Casualty Officer and to assist Consultant Obstetrician and Gynæcologist, vacant August. Salary £745, less residential charge. Modern flat available for married candidate.

Applications, with names of 2 referees, to Hospital Secretary.

NEWPORT, MONMOUTHSHIRE. ROYAL GWENT HOSPITAL. (260 Beds, 10 residents. Recognised F.R.C.S.) SENIOR HOUSE OFFICER required for Casualty Department beginning of July. This is the base Hospital in the Group and all medical and surgical emergencies are admitted through casualty, which is under the full-time charge of a Senior Hospital Medical Officer, there being also 2 Senior House Officers. Post recognised for F.R.C.S. for 6 months and tenable 6 or 12 months as desired. Salary £745, less £120 for board-residence.

Write, quoting 2 referees, to T. A. JONES, Group Secretary. 64, Cardiff-road, Newport, Mon.

NEWMARKET GENERAL HOSPITAL, Newmarket, SUFFOLK. Applications are invited for the post of HOUSE SURGEON, vacant 26th July. Duties include surgical house charge of general surgical, E.N.T. and eye cases. The post is resident and available for 6 months, and is recognised for pre-registration.

Applications, with copies of 3 recent testimonials, should be addressed to the Physician-Superintendent.

OXFORD REGIONAL HOSPITAL BOARD. Applications are invited for the post of REGISTRAR in E.N.T. Surgery to the hospitals of Reading Hospital Management Committee. Accommodation is available. The appointment will be for 1 year and eligible for extension to a second year.

Applications, on forms obtainable from the Secretary, Registrar Committee, 43, Banbury-road, Oxford, should reach him by 30th July.

OXFORD. UNITED OXFORD HOSPITALS. Oxford REGIONAL HOSPITAL BOARD. Applications are invited from registered medical practitioners for the post of FIRST ASSISTANT (Senior Registrar) to the Orthopædic and Accident Services in the United Oxford Hospitals interchangeable with a similar post in the Wingfield Morris Orthopædic Hospital, Oxford. The period of tenure will be approximately equally divided between the 2 posts and the successful candidate may be required to start in either. Candidates should be Fellows of 1 of the Royal Colleges of Surgeons. Experience in both branches of orthopædics is essential.

Applications, on forms obtainable from the Secretary, Joint Committee for Senior Registrars, 43, Banbury-road, Oxford, should reach him by 16th July.

NEWTON ABBOT HOSPITAL, South Devon. Required approximately 30th September, 1954, SENIOR HOUSE OFFICER (medicine), Male or Female. Duties divided equally between 20 acute medical beds in General Section and 140 geriatric beds. This Officer is also required to stand in when Senior House Surgeon is otherwise engaged. Married quarters available.

Applications, stating qualifications, nationality, and age, with copy testimonials, to be sent to the Group Secretary, Torquay District Hospital Management Committee, 62/64, East-street, Newton Abbot, South Devon.

OTLEY, YORKSHIRE. THE GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of RESIDENT MEDICAL OFFICER in the grade of Junior Hospital Medical Officer or alternatively in the grade of Senior House Officer. This appointment is at a busy 170-bedded hospital with full Consultant staff who are members of the Teaching staff of Leeds University, offers good experience in acute general medicine and pædiatrics. Duties to commence on or about 25th July, 1954.

Applications, stating full particulars of age, nationality and experience, together with the names of 2 referees to the undersigned as soon as possible.

E. W. BEST, Group Secretary,
Ilkley and Otley Hospital Management Committee.

PAISLEY. BARSHAW AND THORNHILL MATERNITY HOSPITALS. MATERNITY UNIT. OBSTETRIC HOUSE SURGEONS (2) required for period commencing 1st August, 1954. Salary according to scale.

Applications should be submitted as early as possible to Group Medical Superintendent, Royal Alexandra Infirmary, Paisley.

PAISLEY. ROYAL ALEXANDRA INFIRMARY. House SURGEONS (2) required for period commencing 1st August, 1954. Salary according to scale.

Applications should be submitted as early as possible to Group Medical Superintendent at above address.

PETERBOROUGH. THE MEMORIAL HOSPITAL. PETERBOROUGH AND STAMFORD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON. This position is now vacant.

Applications, with testimonials, should be addressed to the Secretary, Memorial Hospital, Midland-road, Peterborough.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL.

SENIOR HOUSE OFFICER to Casualty and Traumatic Department, vacant 1st August, 1954.

SENIOR HOUSE OFFICER in Surgery, vacant about 1st August, 1954. Recognised for the F.R.C.S.

DENTAL HOUSE SURGEON, vacant immediately. Recognised for the Fellowship.

Applications, stating age, nationality, qualifications, and experience, with the names of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary.
7, Nelson-gardens, Stoke, Plymouth.

PONTYPOOL AND DISTRICT HOSPITAL, Pontypool, MONMOUTHSHIRE. (115 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER (surgical) required immediately. This is the senior resident post, and resident staff consists of 2 House Surgeons, a House Physician and this post. This is a busy acute general hospital with a good Outpatient Department and regular visits from Consultants. Post affords good practical experience in surgery. Salary £775–£50–£1075, less £150 board-residence.

Write, quoting 2 referees, to T. A. JONES, Group Secretary. 64, Cardiff-road, Newport, Mon.

PONTYPRIDD (near). EAST GLAMORGAN HOSPITAL, CHURCH VILLAGE. (316 Beds and large Outpatient Department. 75 adult medical beds with Registrar, Senior House Officer, and 2 Intern House Physicians. Committee's base hospital serving population of 177,000.) SENIOR HOUSE OFFICER (medical). The person appointed will perform duties at other hospitals in the Group, as required.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials to be sent to the Group Secretary, Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointments :—

SENIOR HOUSE OFFICER required in the Traumatic and Orthopædic Department (105 Beds). Duties mainly at the Royal Portsmouth Hospital. Vacant now.

Saint Mary's Hospital (74 acute medical beds)

HOUSE PHYSICIAN, vacant 25th July, 1954. Pre-registration post.

Royal Portsmouth Hospital (65 acute medical beds)

HOUSE PHYSICIAN, vacant 20th July, 1954. Pre-registration post.

Applications, stating age, experience, and qualifications, and names of 2 referees, should be submitted as soon as possible to—

35, Grove-road South, Southsea. E. H. HURST.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited from provisionally registered medical practitioners (Male or Female) for the resident post of JUNIOR HOUSE SURGEON (E.N.T.) vacant 1st August, 1954. Salary £425–£475, less £125 board-residence.

Write, stating age, qualifications with dates, nationality, with copy of 1 recent testimonial, to the Secretary.

READING. ROYAL BERKSHIRE HOSPITAL. (403 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointment of RESIDENT ANÆSTHETIST (Senior House Officer grade) vacant immediately for period of 12 months. Recognised for F.F.A. R.C.S. Salary £745 p.a., less £125 p.a. board-residence.

Write, stating age, qualifications with dates, nationality and present post, with copy of 1 recent testimonial, to Secretary.

ROCHDALE. BIRCH HILL HOSPITAL. Rochdale and DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the position of SENIOR HOUSE OFFICER (obstetrics and gynæcology) now vacant at the above Hospital. The post is for 12 months in the first instance and is recognised for the D.Obst.R.C.O.G.

Applications to the Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, at once.

ROCHDALE. BIRCH HILL HOSPITAL. Rochdale and DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the position of HOUSE OFFICER (obstetrics and gynæcology) now vacant at the above Hospital. The position is pre-registration or post-registration and is for 6 months. Recognised for D.Obst.R.C.O.G.

Applications to the Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, at once.

ROCHDALE. BIRCH HILL HOSPITAL. Rochdale and DISTRICT HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIANS (available for pre-registration). Posts vacant July at above Hospital.

Apply at once, with names and addresses of 2 referees, to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

ROCHFORD, ESSEX. GENERAL HOSPITAL. (603 Beds.) Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER to work in the Chest Unit (72 Beds) at the General Hospital, Rochford, and at the Lancaster House Chest Clinic, Southend-on-Sea, to commence duty as soon as possible. Good experience in general medicine essential and previous experience in tuberculosis and diseases of the chest desirable. Salary £745 p.a.

Applications, stating age, &c., to be sent to the undersigned as soon as possible. J. C. FIELD, Secretary.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) ORTHOPÆDIC HOUSE SURGEON (resident) required in the Orthopædic and Accident Unit, vacant now. The service consists of 100 Beds divided equally between traumatic surgery and " cold " orthopædics. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications to be sent to Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER required in Neurosurgical Department. Post now vacant. Suitable for candidates seeking higher qualification as it offers excellent experience in neurology.

Apply to Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, Essex, as soon as possible.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) HOUSE PHYSICIAN (resident) required from 25th July, 1954. Open to either pre-registration applicants or to fully qualified practitioners. Post tenable for 6 months.

Apply to Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, as soon as possible.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301 Beds.) SENIOR HOUSE OFFICER in Anæsthetics required from 15th July, 1954. Resident post for Male or Female. Married quarters are available. Good experience, modern equipment. Recognised for D.A. and F.F.A.R.C.S.

Applications to Medical Superintendent. Hospital may be seen by arrangement. Tel. : Romford 7711.

ROMFORD, ESSEX. VICTORIA HOSPITAL. (99 Beds.) RESIDENT HOUSE SURGEON (Male) required immediately. Post not approved for pre-registration purposes.

Applications should be forwarded to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

ROMFORD, ESSEX. VICTORIA HOSPITAL. (99 Beds.) RESIDENT HOUSE PHYSICIAN (Male) required immediately. Post not approved for pre-registration purposes.

Applications should be forwarded to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

RYDE, I.W. ROYAL I.W. COUNTY HOSPITAL. (116 Beds.) ISLE OF WIGHT GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE PHYSICIAN, vacant mid-July. Post recognised for Pre-registration Service.

Applications, with names of 2 referees, to Hospital Secretary.

SALFORD HOSPITAL MANAGEMENT COMMITTEE. ROYAL MANCHESTER CHILDREN'S HOSPITAL AND SALFORD ROYAL HOSPITAL. ANÆSTHETIST required (Senior House Officer status) to commence duty on 1st September, 1954, and to be resident at the Royal Manchester Children's Hospital, Pendlebury, with duties at the Salford Royal Hospital. The post is recognised for the F.F.A.R.C.S.

Applications, stating age, qualifications and experience, together with copies of 3 recent testimonials, to be forwarded to the Hospital Secretary, Royal Manchester Children's Hospital, Pendlebury, to be received not later than 7 days after the appearance of this advertisement.

SALFORD 6, LANCASHIRE. HOPE HOSPITAL. Salford HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of PÆDIATRIC SENIOR HOUSE OFFICER, which becomes vacant on 27th July, 1954, for a period of 12 months. Applicant holding the Diploma of Child Health preferred. The department comprises 140 Beds, including medical and surgical wards, infant wards and Outpatients' Department. The pædiatric staff supervise the neonatal nurseries of the Obstetrical Department (approximately 70 lying-in Beds).

Applications, giving details of experience and qualifications, together with the names and addresses of 3 referees, should be addressed to the Hospital Secretary, to arrive as soon as possible.

SALFORD 6, LANCASHIRE. HOPE HOSPITAL. Salford HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SURGICAL SENIOR HOUSE OFFICER at the above Hospital. The post is recognised for the F.R.C.S. England.

Applications, stating age, qualifications and experience, together with the names and addresses of 2 referees, should be addressed to the Secretary, Hope Hospital, Salford, 6, as soon as possible.

SALFORD ROYAL HOSPITAL. (258 Beds—General.) SALFORD HOSPITAL MANAGEMENT COMMITTEE. Applications invited for the post of SENIOR HOUSE OFFICER (medical). Appointment for 1 year, vacant August. Salary subject to deduction of £140 p.a. for board and lodging.

Applications to the Secretary, Salford Royal Hospital, Salford, 3.

SALISBURY GENERAL HOSPITAL. Orthopædic DEPARTMENT. SALISBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR to the above department, vacant 1st October, 1954.

Application forms may be obtained from, and must be returned to, Group Secretary, Odstock Hospital, Salisbury, within 14 days of the appearance of this advertisement.

SALISBURY GENERAL HOSPITAL. Salisbury Group HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT HOUSE SURGEON for a period of 6 months from 6th August, 1954. The post is open to pre-registration candidates.

Apply, naming 2 referees, to Group Secretary, Odstock Hospital, Salisbury.

SALISBURY GENERAL HOSPITAL. Children's Department. SALISBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of PÆDIATRIC HOUSE OFFICER to the above Department, situated at Odstock Hospital and containing 55 medical and surgical beds. Post recognised for D.C.H.

Applications, stating age, nationality, qualifications, previous posts held, with relevant testimonials, should be submitted immediately to Group Secretary, Odstock Hospital, Salisbury.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of SENIOR REGISTRAR in Pathology based at Stobhill Hospital, Glasgow, with primary duties in hæmatology and blood-transfusion, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 22nd July, 1954.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Applications are invited for a NON-RESIDENT SENIOR REGISTRAR in Radiology with duties mainly at the Royal Northern Infirmary and Raigmore Hospital, Inverness. Candidates should hold a Diploma in Radiology and have previous practical experience in diagnostic radiology.

Applications, on schedules to be obtained from the undersigned, should be submitted by 19th July, 1954.

A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore, Inverness.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD invite applications for a post of SENIOR HOUSE OFFICER under the Joint Training Scheme in Hospital and General Practice, in which the Board and the Executive Council for the County of Inverness are associated. The scheme provides a combined training of 2 years duration for young medical practitioners intending to enter medical practice or a specialty. Concurrent experience in hospital and general practice is given in various departments of the hospitals at Inverness and with selected general practitioners in the town and surrounding district. The post is non-resident and the salary is £745 p.a.

Candidates should apply by 19th July, 1954, on forms obtainable from the undersigned, by whom further particulars will be supplied on request. A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore, Inverness.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT SENIOR SURGICAL REGISTRAR required for Nottingham General Hospital. Possession of higher surgical qualification desirable. Appointment for 1 year in first instance, reviewable annually. It has been agreed between the Sheffield Regional Hospital Board and the Board of Governors of the United Sheffield Hospitals that if circumstances permit the tenure of appointment will be divided between Nottingham General Hospital and the Teaching Hospitals.

Applications, giving age, nationality, qualifications, present and previous appointments with dates, together with names and addresses of 3 referees, should be sent to the Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, to arrive not later than 19th July, 1954.

SHEFFIELD REGIONAL HOSPITAL BOARD. Applications are invited for the posts of REGISTRAR in Psychiatry in the following hospitals: Carlton Hayes, near Leicester; Mapperley, Nottingham; Pastures, near Derby; and Middlewood, Sheffield; to commence in October, 1954. These posts form a part of the joint training scheme in psychiatry sponsored by the Newcastle and Sheffield Regional Hospital Boards. Full particulars of the posts may be obtained from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield.

Applications should be made to the Secretary of the Board, by 12th July, 1954, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD REGIONAL HOSPITAL BOARD. Locum RESIDENT or NON-RESIDENT REGISTRAR (orthopædics) required immediately at Scunthorpe and District War Memorial Hospital. Remuneration at rate of £16 per week, with a deduction, if resident.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, naming 2 referees.

SHEFFIELD REGIONAL HOSPITAL BOARD. Locum RESIDENT REGISTRAR (anæsthetics) required from 17th July at Beckett Hospital, Barnsley, for 1 month in first instance. Remuneration at the rate of £16 per week, with a deduction for residence.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, naming 2 referees.

SHEFFIELD REGIONAL HOSPITAL BOARD. Locum REGISTRAR (orthopædics) required from 9th July to 8th August inclusive at Beckett Hospital, Barnsley. Single accommodation available. Remuneration at the rate of £16 per week with a deduction if resident.

Apply to Secretary Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, naming 2 referees.

SHEFFIELD REGIONAL HOSPITAL BOARD. Locum RESIDENT SURGICAL REGISTRAR required immediately at Montagu Hospital, Mexborough. Remuneration at the rate of £16 per week with a deduction for residence.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, naming 2 referees.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT SENIOR REGISTRAR in Chest Diseases for the Leicester Isolation Hospital and Chest Unit, Groby-road, Leicester. Clinical duties mainly concerned with chest work but candidates should have general medical experience and special experience in the treatment of chest diseases and tuberculosis. Appointment for 1 year in the first instance, reviewable annually.

Applications giving age, nationality, qualifications, present and previous appointments with dates, and naming 3 referees, to the Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 12th July, 1954.

SHEFFIELD REGIONAL HOSPITAL BOARD. Locum NON-RESIDENT SENIOR REGISTRAR (obstetrics and gynæcology) required immediately at the Leicester Royal Infirmary for the month of July. Remuneration at rate of £22 per week.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, naming 2 referees.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications invited for the following posts:—

Royal Hospital Unit

(*a*) NON-RESIDENT SENIOR REGISTRAR in Orthopædics. Post vacant 9th October.
Closing date for applications 24th July, 1954.

(*b*) NON-RESIDENT SURGICAL REGISTRAR. Post vacant 15th October.

Royal Infirmary Unit

NON-RESIDENT OPHTHALMIC REGISTRAR. Post vacant 31st October.

Applications for the above posts should state age, qualifications and experience with the names of 3 referees, and be sent immediately (except in post (*a*)) to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

Jessop Hospital for Women

RESIDENT SENIOR HOUSE OFFICER in Obstetrics.

Post vacant 1st October, 1954.

Applications, stating age, qualifications and experience, with 3 recent testimonials, should be forwarded immediately to the Superintendent, Jessop Hospital for Women, Leavygreave-road, Sheffield, 3.

SHREWSBURY. ROYAL SALOP INFIRMARY/COPTHORNE HOSPITAL. (500 Beds.) Senior House Officer to work as CLINICAL PATHOLOGIST to Group Laboratory. Appointment tenable for 1 year, resident or non-resident, vacant end of July. (A unit of the Public Health Laboratory Service is housed in the same building.)

Apply Group Secretary, Royal Salop Infirmary, Shrewsbury, naming 3 referees.

SHREWSBURY. ROYAL SALOP INFIRMARY. (241 Beds.) SHREWSBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from general registered practitioners (Male or Female) for the appointment of RESIDENT HOUSE SURGEON in General Surgery. Now vacant. Recognised for the F.R.C.S., and approved for Pre-registration Service.

Applications, with references, should be sent to the Secretary, Group 15 Hospital Management Committee, Royal Salop Infirmary, Shrewsbury.

STAFFORD. STAFFORDSHIRE GENERAL INFIRMARY. (175 Beds—32 Bed Recovery Unit.) STAFFORD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (Male or Female). Post or pre-registration candidates considered. Post vacant 17th July.

Applications, giving full particulars and copies of 3 recent testimonials, to the Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

SCUNTHORPE HOSPITAL MANAGEMENT COMMITTEE. Vacancy for Locum HOUSE PHYSICIAN (Senior House Officer), 1st–14th August. Busy department offering good experience.

Applications, naming 2 referees, to Group Secretary, War Memorial Hospital, Scunthorpe.

SCUNTHORPE. WAR MEMORIAL HOSPITAL. (267 Beds.) SCUNTHORPE HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE SURGEON required early August. Senior House Officer grading. Appointment offers exceptional experience in general surgery and gynæcology.

Applications, naming 2 referees, to Group Secretary.

SHOTLEY BRIDGE GENERAL HOSPITAL, Shotley BRIDGE, CO. DURHAM. (557 Beds.) NORTH WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident posts of 2 HOUSE PHYSICIANS which are recognised for pre-registration purposes. Salary £425–£525 p.a. according to experience. Deduction of £125 p.a. for board, lodging, &c. 6 months appointment.

Applications, stating age, qualifications, experience and enclosing copies of 2 recent testimonials, to the Secretary Superintendent.

SHOTLEY BRIDGE GENERAL HOSPITAL, Shotley BRIDGE, CO. DURHAM. (557 Beds.) NORTH WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident posts of 2 HOUSE SURGEONS which are recognised for pre-registration purposes. Salary £425–£525 p.a. according to experience. Deduction of £125 p.a. for board, lodging, &c. 6 months appointment. Posts recognised for F.R.C.S.

Applications, stating age, qualifications, experience, and enclosing copies of 2 recent testimonials, to the Secretary-Superintendent.

SHOTLEY BRIDGE GENERAL HOSPITAL, Shotley BRIDGE, CO. DURHAM. (557 Beds.) NORTH WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of HOUSE OFFICER (obstetrics and gynæcology) which is recognised for pre-registration purposes. Salary £425–£525 p.a. according to experience. Deduction of £125 p.a. for board, lodging, &c. 6 months appointment.

Applications, stating age, qualifications, experience, and enclosing copies of 2 recent testimonials, to the Secretary-Superintendent.

SHOTLEY BRIDGE GENERAL HOSPITAL, Shotley BRIDGE, CONSETT, CO. DURHAM. NORTH WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE OFFICER (obstetrics and gynæcology) required for 6 months commencing 1st August for duties in Obstetrical (30 Beds) and Gynæcological (43 Beds) Departments. Resident at Richard Murray Maternity Hospital. Recognised for D.Obst.R.C.O.G. Second pre-registration or post-registration appointment.

Apply to the Group Secretary stating age and experience and enclosing copies of 3 recent testimonials.

SOUTHAMPTON CHEST HOSPITAL. South West METROPOLITAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR required immediately for Thoracic Unit (80 surgical beds) at above Hospital. This is a locum tenens appointment and can be held on that basis for at least 6 months; at the end of this time a permanent appointment will probably be made.

Applications, together with copies of testimonials, should be forwarded to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON GENERAL HOSPITAL. (471 Beds—80 surgical.) 2 HOUSE SURGEONS required middle and end of July, 1954. Posts tenable for 6 months. Both recognised for F.R.C.S. and Pre-registration Service.

Applications, with copies of testimonials, should be forwarded as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of Whole-time REGISTRAR in the Radiotherapy Department of the above Hospital. This Department is a fully-equipped, self-contained unit, having its own beds and serving a wide area. Candidates are invited to visit the Hospital if they so desire.

Forms of application, which should be returned not later than 17th July, 1954, may be obtained from the undersigned.

FRANK JENNINGS, Secretary,

Southampton Group Hospital Management Committee.
Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) CASUALTY OFFICER/SENIOR HOUSE OFFICER (orthopædic) required for the above Hospital (Orthopædic Unit 74 Beds). This Hospital is the centre to which all trauma from a large industrial town and port is directed thus providing excellent experience in the treatment of traumatic conditions.

Applications, with copies of testimonials, to be submitted as soon as possible, to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON CHILDREN'S HOSPITAL. (Recognised by Conjoint Board for D.C.H.) HOUSE OFFICER required. Salary, &c., as nationally advocated.

Applications, with copies of testimonials, should be forwarded immediately to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for SENIOR HOUSE OFFICER (orthopædics). Post recognised for F.R.C.S.

Apply, stating age and nationality, together with details of previous service, to the Group Secretary, Stoke-on-Trent Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for HOUSE OFFICER (general surgery), vacant now. Hospital recognised for F.R.C.S. examinations, and the post is recognised for experience during the pre-registration period.

Apply, with copy testimonials, stating age, nationality and full details of previous service, to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (medical) required. Post vacant now. Recognised for pre-registration experience.

Applications, with copy testimonials, to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. (475 Beds.) GYNÆCOLOGY DEPARTMENT. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER or HOUSE OFFICER according to experience. Post recognised for M.R.C.O.G. and/or for pre-registration (surgery). Experience in abnormal obstetrics available, but the work is mostly gynæcological.

Applications, with details and 2 testimonials, to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. (938 Beds.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for the post of HOUSE OFFICER (general surgery), vacant now. Recognised pre-registration post.

Applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. (485 Beds. Recognised for D.A. and recognition for F.F.A.R.C.S applied for.) STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER in Anæsthetics, vacant 1st October, 1954. Previous anæsthetic experience desirable, but not essential. The post offers experience in anæsthesia for all types of general surgery, thoracic and cardiac surgery, including an Obstetric Unit of 60 Beds. Staff includes a Senior Registrar, who shares in emergency duties.

Applications, with necessary details, and copy testimonials, to the Group Secretary, Stoke-on-Trent Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (pædiatrics) required. Recognised pre-registration post, vacant 7th July.

Detailed applications, with copy testimonials, should be forwarded to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER in Pædiatrics. Post recognised for D.C.H. Vacant 21st August.

Applications, with copy testimonials, and details of previous experience, should be forwarded to the Group Secretary, Hospital Management Committee, Stoke-on-Trent, as soon as possible.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE OFFICER (medical), vacant 7th August. Recognised for experience during pre-registration period.

Apply, with copy testimonials, stating age, nationality and full details of previous service, to the Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STROUD GENERAL HOSPITAL, Stroud, Gloucestershire. SENIOR HOUSE OFFICER required for Medicine. Post offers valuable experience for those wishing to enter General Practice.

Applications, naming 2 referees, to the Hospital Secretary, Stroud General Hospital, Stroud, Glos.

STROUD GENERAL HOSPITAL, Stroud, Gloucestershire. SENIOR HOUSE OFFICER required for Surgery. Post offers valuable experience for those wishing to enter General Practice.

Applications, naming 2 referees, to the Hospital Secretary, Stroud General Hospital, Stroud, Glos.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (382 Beds.) HOUSE SURGEON (House Officer grade) required for 1 of the 2 general surgical teams. (Recognised for the F.R.C.S.) Post vacant about 2nd August, 1954, and tenable for 6 months. Preference given to candidates seeking pre-registration posts under the Medical Act, 1950.

Applications to the Group Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (382 Beds.) HOUSE PHYSICIAN (House Officer grade) required for 1 of the 2 medical teams for duties mainly on the acute wards. Post vacant about 28th July, 1954, and tenable for 6 months. Preference given to candidates seeking pre-registration posts under the Medical Act, 1950.

Applications to the Group Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

ST. ALBANS (near), HERTFORDSHIRE. SHENLEY HOSPITAL. (2262 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR HOUSE OFFICER (psychiatric), resident or non-resident, for 1 year in the first instance at above Hospital, 16 miles from London. Opportunity for work with neurotic as well as psychotic patients, and full facilities for D.P.M. training. The Hospital may be visited by appointment.

Applications to the Medical Superintendent.

ST. ALBANS (near), HERTFORDSHIRE. SHENLEY HOSPITAL. (2262 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SENIOR REGISTRAR (resident or non-resident), at above Hospital. Candidates should have had not less than 3 years psychiatric experience. Possession of the D.P.M. desirable. Hospital may be visited by appointment. Unfurnished house available at moderate rent.

Application forms obtainable from, and returnable to, Secretary by 31st July, 1954.

SOUTHEND GENERAL HOSPITAL. Applications are invited for the post of RESIDENT GYNÆCOLOGICAL HOUSE SURGEON, vacant 14th August, 1954. Post recognised for M.R.C.O.G.

Applications, &c., to reach the undersigned not later than 15th July, 1954. J. C. FIELD, Secretary.

SOUTHPORT AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE.

Southport General Infirmary

JUNIOR HOSPITAL MEDICAL OFFICER for whole-time Casualty duties. Salary £775–£1075 p.a.

Southport Promenade Hospital

SENIOR HOUSE OFFICER (Surgeon). Mainly orthopædic and E.N.T. duties. Salary £745 p.a.

Above posts are resident and deductions will be made for board, &c.

Apply, stating age, qualifications, nationality and experience, with copies of 2 testimonials, to—

T. CROOK, Group Secretary,
Southport and District Hospital Management Committee.
Promenade Hospital, Southport.

SWANSEA HOSPITAL. (403 Beds.) Glantawe Hospital MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the resident appointment of SENIOR HOUSE OFFICER in the Surgical Unit of the above Hospital. Vacant now. The Hospital is recognised for the F.R.C.S. (Eng.) examinations.

Applications, stating age, qualifications and experience, should be forwarded to the Group Secretary, Glantawe Hospital Management Committee, St. Helen's-road, Swansea.

SWINDON HOSPITAL GROUP. (536 Beds.) Applica-tions are invited for the appointment of RESIDENT CASUALTY OFFICER (Senior House Officer grade—£745 p.a.) at Great Western Hospital, Swindon. Post recognised by R.C.S. for 6 months of years training under Fellowship regulations. Work of Accident and Orthopædic Department, associated with Wingfield-Morris Orthopædic Hospital, Oxford, includes large number of industrial injuries. Residential emoluments £145 p.a.

Full details, with copies of 3 recent testimonials, to Secretary, 7, Okus-road, Swindon, as soon as possible.

TREDEGAR GENERAL HOSPITAL. (20 miles from Newport and 24 from Teaching Hospital in Cardiff; 6 miles from the Vale of Usk, Surgical Unit of 50 Beds, with also 6 orthopædic beds, under daily supervision of Consultant Surgeon and visiting supervision of Orthopædic Surgeon. Busy Out-patient and Casualty Departments.)

1 JUNIOR HOSPITAL MEDICAL OFFICER.
1 HOUSE SURGEON (pre-registration if suitable candidate available).

Junior Hospital Medical Officer: salary £775–£50–£1075, less agreed deduction for married quarters (if required). House Officer post tenable 6 months: salary £425–£525, less agreed deduction for married quarters or £125 p.a. for single residential emoluments.

Apply, with full particulars, to the Group Secretary, Hospital Management Committee, St. Martin's-road, Caerphilly, near Cardiff.

VENTNOR, ISLE OF WIGHT. ROYAL NATIONAL HOSPITAL FOR DISEASES OF THE CHEST (249 Beds). Required:—

JUNIOR HOSPITAL MEDICAL OFFICER, and
SENIOR HOUSE OFFICER.

Resident posts. Hospital has all facilities for major thoracic surgery.

Applications, with names of 2 referees, to Physician-Superintendent.

WALSALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointments, vacant 1st August:—

Manor Hospital (333 Beds)
HOUSE SURGEON (1 vacancy).
HOUSE PHYSICIAN (2 vacancies).
General Hospital (181 Beds)
HOUSE SURGEON (2 vacancies).
HOUSE PHYSICIAN (1 vacancy).

All above posts recognised pre-registration.

Applications to Secretary, with names of 2 referees.

WARRINGTON GENERAL HOSPITAL. (368 Beds.) Applications are invited for the post of HOUSE SURGEON (Male or Female), recognised for pre-registration, at the above Hospital. National Health Service terms and conditions. The staffing of the Surgical Unit consists of a Senior Registrar, Registrar and 2 House Surgeons. The post offers a comprehensive training in surgery.

Apply, giving full particulars, to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (Resident Casualty Officer). The commencing salary is in accordance with the scale £700–£50–£1000, less a deduction of £130 for residential emoluments. Applications will also be considered for a short-term period on a week-to-week basis.

Applications, stating age, experience and qualifications, should be forwarded or telephoned to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital (Tel. No. 1666), Warrington, Lancs.

WARRINGTON INFIRMARY. Warrington and District HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from qualified practitioners for the vacancy of RESIDENT ANÆSTHETIST (Senior House Officer grade), Male or Female, at the Warrington Infirmary. Scale of salary £670 p.a., less £130 p.a. for residential emoluments.

Applications to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington.

WARWICK (near). CENTRAL MENTAL HOSPITAL. SENIOR HOUSE OFFICER required on 1st September in this Mental Hospital of 1400 Beds with Neurosis Unit, 4 adult and 2 child psychiatry clinics recognised for the D.P.M., and Departments of Electroencephalography, Occupational Therapy, Psychology and social work. A modern house is available.

Applications, together with the names and addresses of 3 referees, to the Medical Superintendent within 14 days of the appearance of this advertisement.

WATFORD AND DISTRICT PEACE MEMORIAL HOS-PITAL. (189 Beds.) Applications are invited for the post of HOUSE PHYSICIAN. Post recognised for pre-registration. Vacant middle of July. Salary according to National Health Service scale.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, should be sent to—

CYRIL HOPKINSON, Administrator.

WELSH REGIONAL HOSPITAL BOARD.

REGISTRAR (general surgery), Caernarvon and Anglesey General Hospital, Bangor. (Non-resident.)

REGISTRAR (anæsthetics), Caernarvon and Anglesey General Hospital, Bangor. (Non-resident.) Hospital recognised for F.F.A.R.C.S.

REGISTRAR (anæsthetics), Maelor General Hospital, Wrexham.

REGISTRAR (obstetrics and gynæcology), Morriston Hospital. (Non-resident.)

REGISTRAR (dermatology). Successful candidate will be based at St. David's Hospital, Cardiff, will assist in the Region and in Regional Skin Clinics, and will also be expected to undertake duties in the Department of Dermatology at the United Cardiff Hospitals. (Non-resident.)

Subject to review end of first year.

SENIOR REGISTRAR (obstetrics and gynæcology), Morriston Hospital. Hospital recognised for M.R.C.O.G. The appointment will be for 1 year in the first instance, then subject to review annually.

Forms of application from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days

WELSH REGIONAL HOSPITAL BOARD.

REGISTRAR (traumatic surgery), based at St. David's Hospital, Cardiff. (Resident.)

ORTHOPÆDIC REGISTRAR, Wrexham Hospitals. (Resident/non-resident.)

REGISTRAR (general surgery), based at Caerphilly District Miners' Hospital, Caerphilly, Glam. (Resident.) Married quarters available.

REGISTRAR (general surgery), Merthyr General Hospital, Merthyr (120 Beds), will also serve other hospitals within Group. (Resident or non-resident.)

REGISTRAR, North Wales Child Guidance Clinics. Establishment of clinics includes Consultant, Play Therapist, Psychologist, 3 Psychiatric Social Workers. Central Clinic at Colwyn Bay and peripheral clinics serving North Wales Area.

Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WEST BROMWICH. HALLAM HOSPITAL. Appli-cations are invited for the post of SENIOR HOUSE OFFICER (pathology), for the Group Laboratory at this Hospital. Duties at other hospitals in the Group may be included. Previous experience in pathology not essential.

Applications, stating age, nationality, qualifications, and experience, with copies of 3 recent testimonials, to the Pathologist, as soon as possible.

WESTON-SUPER-MARE GENERAL HOSPITAL. (110 Beds.) Applications are invited from registered medical practitioners for the resident appointment, vacant mid-August, of HOUSE PHYSICIAN (non pre-registration). The appointment is for 6 months in the first instance and may be renewed for a further 6 months.

Applications, stating age, qualifications and experience, together with names and addresses of 2 referees, should be addressed to the Secretary, Weston-super-Mare Hospital Management Committee.

WESTON-SUPER-MARE GENERAL HOSPITAL. (110 Beds.) Applications are invited from registered medical practitioners for the resident appointment of HOUSE SURGEON (non pre-registration). The appointment will be for a period of 6 months in the first instance and may be renewed for a further 6 months.

Applications, stating age, qualifications, and experience, together with names and addresses of 2 referees, should be addressed to the Secretary, Weston-super-Mare Hospital Management Committee.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOS-PITAL. (311 Beds.) SENIOR HOUSE OFFICER (orthopædics) required. Post recognised F.R.C.S. Wide experience available under area orthopædic team. Appointment for 6 months in first instance. Vacant 10th August.

Applications, with copies of 2 testimonials, to the Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. Resident SURGICAL REGISTRAR required at above Hospital. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, Windsor Group Hospital Management Committee Alma-road, Windsor, by 18th July.

WORKINGTON INFIRMARY. (108 Beds.) Resident HOUSE SURGEON (Male or Female), pre-registration. Good experience in general and pædiatric surgery and casualty work. First, second, or Senior House Officer appointment according to experience, at appropriate remuneration. Vacant now.

Applications, naming 2 referees, to the Secretary, Workington Infirmary, Cumberland.

WOLVERHAMPTON GROUP.

The Royal Hospital, Wolverhampton (an Associated Hospital of the University of Birmingham Medical School)

SENIOR HOUSE OFFICER or HOUSE OFFICER (Fracture and Orthopædic Department), vacant now.

SENIOR HOUSE OFFICER (Anæsthetist). Appointment recognised for D.A. and F.F.A.R.C.S. vacant now.

HOUSE OFFICER (Casualty Department), vacant now.

•3 HOUSE OFFICERS (general surgery), vacant now.

•HOUSE OFFICER (pædiatrics). Appointment recognised for D.C.H. Vacant 16th July.

New Cross Hospital, Wolverhampton

•HOUSE OFFICER (general surgery), vacant now.

SENIOR HOUSE OFFICER (obstetrics). Appointment recognised for D.Obst.R.C.O.G. Vacant 5th July.

•Approved for Pre-registration Service.

Wolverhampton Eye Infirmary

Part-time NON-RESIDENT CLINICAL ASSISTANT required, 3 sessions weekly, Monday, Wednesday, and Friday mornings. Duties in association with Consultants, mainly refraction work at morning outpatient clinics. D.O. an advantage. Salary £525 p.a. for 3 sessions weekly.

Applications, with copies of 3 recent testimonials, to be sent to Group Secretary, The Royal Hospital, Wolverhampton.

WOKING AND CHERTSEY GROUP HOSPITAL MANAGEMENT COMMITTEE. GROUP PATHOLOGY LABORATORY. REGISTRAR required from mid-September for duty in Group Laboratory situated at St. Peter's Hospital, Chertsey. Laboratory may be visited by arrangement with Director (Ottershaw 441).

Application forms can be obtained from, and should be returned by 19th July to, Secretary, Hospital Management Committee, Huntington, Guildford-road, Chertsey.

YORKSHIRE. EAST RIDING HOSPITAL MANAGEMENT COMMITTEE.

Westwood Hospital, Beverley, E. Yorks (207 Beds)

(*a*) HOUSE SURGEON (first, second, or third post), vacant now. General surgical duties, some orthopædics. Offering good opportunity for general experience in busy acute General Hospital Recognised for F.R.C.S. Approved pre-registration post. Married accommodation available.

(*b*) ORTHOPÆDIC HOUSE SURGEON (first, second, or third post), vacant now. Offers good opportunity for general experience in busy acute General Hospital. Approved pre-registration post. Married accommodation available.

(*c*) ASSISTANT PATHOLOGIST (Senior House Officer grade) required in Area Laboratory, with attendance at Branch Laboratory, Driffield. Offers experience all branches pathology.

(*d*) SENIOR HOUSE OFFICER in Obstetrics and Gynæcology required, vacant August. Hospital has Maternity Unit of 22 Beds and Gynæcological Annexe of 18 Beds.

East Riding General Hospital, Driffield, Yorks (269 Beds)

(*e*) HOUSE SURGEON (first, second, or third post), vacant now. Approved pre-registration post. General surgical duties, Recognised for F.R.C.S.

Broadgate (Mental) Hospital, Beverley, E. Yorks (650 Beds)

(*f*) HOUSE PHYSICIAN (first, second, or third post), vacant now.

Salary for (*a*), (*b*), (*c*) and (*f*) is £425–£525, and for (*c*) and (*d*) is £745. Fully qualified practitioners may apply for the pre-registration posts.

Detailed applications to Group Secretary, Westwood Hospital, Beverley, Yorks.

YORK A AND TADCASTER HOSPITAL MANAGEMENT COMMITTEE.

York County Hospital (Acute Hospital of 269 Beds with full Consultant staff)

CASUALTY OFFICER (with charge of orthopædic beds), resident or non-resident. Junior Hospital Medical Officer grade, vacant immediately. Salary £775–£50–£1075, less £153 if resident. Recognised for F.R.C.S.

York. Fairfield Sanatorium (63 Beds); **City Hospital** (265 Beds)

Required immediately, SENIOR HOUSE OFFICER in Chest Diseases and General Medicine to spend half time at Fairfield Sanatorium (63 Beds) and at the City Hospital, where 8 Beds are reserved for investigation of chest cases, and where outpatient refill clinics are held, the remainder of time at County and City General Hospitals (269 and 265 Beds respectively), in Department of General Medicine. Previous experience in treatment of tuberculosis an advantage. Salary £745. A furnished flat is available at a reasonable rental, or accommodation may be provided temporarily.

York Military Hospital (Civilian Wing) (60 Beds)

Required immediately, SENIOR HOUSE OFFICER (resident or non-resident). There are 18 gynæcological beds, 30 general surgical beds, and 12 medical beds. The Hospital is associated with the County Hospital (general hospital of 269 Beds) where relief casualty and emergency work and relief work for House Surgeons may be undertaken and where residence can be provided. Salary £745, less £153 if resident. A furnished flat is available at reasonable rental.

Applications, giving age, nationality, experience, qualifications, and names of 2 referees, immediately to the Secretary, York A and Tadcaster Hospital Management Committee, Bootham Park, York.

WHITEHAVEN HOSPITAL, Cumberland. (109 Beds. plus 19 beds in Annexe.) SENIOR HOUSE SURGEON, with orthopædic and casualty duties, vacant immediately.

Detailed applications, stating qualifications with dates and copies of 2 testimonials, to Group Secretary, Workington Infirmary, Cumberland.

BELFAST. ROYAL BELFAST HOSPITAL FOR SICK CHILDREN.

(*a*) 1 SENIOR HOUSE OFFICER. Applications are invited from fully registered practitioners with at least 1 years hospital experience for Lissue Branch Hospital (50 Beds), with duties in Main Hospital. Previous experience in a Children's Hospital desirable.

(*b*) 5 RESIDENT HOUSE OFFICERS. Applications are invited from fully registered practitioners with 1 years hospital experience. Pre-registered Medical Officers will also be considered. The appointments are for a period of 6 months, commencing 1st August, 1954.

Applications to be addressed to the Executive Officer, Royal Belfast Hospital for Sick Children, Falls-road, Belfast, not later than 5th July, 1954.

B.W.I. UNIVERSITY COLLEGE HOSPITAL OF THE WEST INDIES. Applications are invited for posts of HOUSE OFFICER (fully registered) at the above-named Hospital. This is a general teaching hospital of 300 Beds approved by the London University for its degrees. Duties (to commence as early as possible) include approximately 6 months in either medical or surgical casualty, plus 6 months in Department of Anæsthetics, Orthopædics, Obstetrics and Gynæcology, or Medicine. The appointment is for 1 year. Salary £650 p.a., less £125 for board, residence, &c. Single accommodation is provided. Return first-class passage by sea will be paid.

Applications, stating nationality, age, qualifications with dates and details of previous appointments, together with the names and addresses of 3 referees or 3 testimonials in lieu thereof, should be sent to the Hospital Manager and Secretary, University College Hospital, Mona P.O., Jamaica, B.W.I., by 24th July, 1954.

DUBLIN. JERVIS STREET HOSPITAL. The Managing Committee of the Hospital invite applications from qualified practitioners with surgical experience for the position of SURGICAL REGISTRAR to the Hospital. Each candidate shall, with his application, state his age, and furnish particulars of his surgical and medical qualifications and experience. The appointment shall be for 1 year, but the appointee may be appointed for a second and a third consecutive year. The appointee shall be resident in the Hospital and have full board. Candidates shall on request be furnished with a copy of the terms of appointment, duties, rules and regulations affecting the Surgical Registrars.

Applications, addressed to the undersigned, must be received at the Hospital before NOON on Monday, 16th August, 1954.

By Order, SHEILA O'DEA, Secretary.

NEWCASTLE, co. DUBLIN. PEAMOUNT SANATORIUM. Applications are invited from qualified medical practitioners for appointment as JUNIOR ASSISTANT MEDICAL OFFICER. The post will be for 6 months with possible extension for a further 6 months. The salary will be at the rate of £320 p.a., with full board and residence in addition. The Sanatorium has 527 Beds, of which 82 are for pulmonary tuberculosis in children of school age. There is a Major Thoracic Surgical Service.

Applications should give full details of qualifications and experience, should be accompanied by copies of 2 recent testimonials and the names of 3 referees, should mention the earliest date on which it would be possible to commence duty if appointed, and should be sent before 12th July, 1954, to the Resident Medical Superintendent at the Sanatorium. No application form is provided.

NEW YORK. ALBANY HOSPITAL, Albany, New York, U.S.A. NEUROLOGY RESIDENCIES available in 700-Bed University-Teaching, General Hospital. Salary range $1620–$2220 annually, plus laundry, uniforms and room.

Address inquiries to Medical Director.

Public Appointments

ABERDEEN. CORPORATION OF THE CITY OF ABERDEEN. HEALTH AND WELFARE DEPARTMENT. Applications are invited for the post of ORTHOPTIST. Candidates must be under 45 years of age. The salary scale for the post is £435 p.a. rising by annual increments of £15 to £555 p.a. and the conditions of service are those laid down by the Whitley Councils for the Health Services (Great Britain), Professional and Technical Council "A."

Applications, accompanied by 1 copy of each of 3 recent testimonials, should be sent to the Medical Officer of Health, Willowbank House, Willowbank-road, Aberdeen, on or before Saturday, 10th July, 1954. J. C. RENNIE, Town Clerk.

Town House, Aberdeen, June, 1954.

GLAMORGAN EDUCATION AUTHORITY. Rhondda URBAN DISTRICT COUNCIL. COMMITTEE FOR EDUCATION. Applications are invited from registered medical practitioners for appointment as Temporary ASSISTANT SCHOOL MEDICAL OFFICER for a period of 1 year commencing in August, 1954, under the supervision of the District School Medical Officer, at a salary of £950 p.a. Preference will be given to candidates holding the D.P.H. or D.C.H. and experience in pædiatrics will be an advantage. The appointment is superannuable and the successful candidate will be required to pass an examination as to physical fitness.

Forms of application and conditions of appointment may be obtained from the District School Medical Officer, Tydfil House, Pentre, Rhondda, by whom completed applications should be received as soon as possible.

D. J. JONES, Clerk of the Council.

BLACKPOOL. COUNTY BOROUGH OF BLACKPOOL. PUBLIC HEALTH DEPARTMENT. ASSISTANT MEDICAL OFFICER (Female) Maternity and Child Welfare. Applications are invited for the above appointment from qualified medical Women. The salary payable in respect of the appointment will be in accordance with the Medical Whitley Council award, viz., £950 p.a.–£50 annually–£1300 p.a. The appointment will be subject to the provisions of the National Health Service (Superannuation) Regulations, 1947 and 1948, and the person appointed will be required to contribute to the superannuation fund maintained by the Council. The duties appertaining to the post will be subject to the general direction and supervision of the Medical Officer of Health and will be those from time to time determined by the Council.

Forms of application and conditions of service may be obtained from the Medical Officer of Health, Municipal Health Centre, Whitegate-drive, Blackpool, and should be returned to reach him not later than 31st July, 1954.

TREVOR T. JONES, Town Clerk.

BAHRAIN, PERSIAN GULF. GOVERNMENT OF BAHRAIN MEDICAL DEPARTMENT invites applications from British Women Doctors for the post of ASSISTANT to the Lady Medical Officer in charge of Women's medical services. Age 30–40. Minimum salary £1584, no allowances, rising by annual increments of £45. Starting salary on incremental scale according to age up to 40. Non-contributory gratuity on retirement. Private practice among Europeans only. No income-tax. Agreement for 2 years, renewable by mutual consent. Free quarters with hard furniture and car. Home leave amounts to 2½ months on full pay for every years service. Free return air passage every 2 years.

Applications should be addressed to Messrs. CHAS. KENDALL & PARTNERS LTD., 7, Albert-court, Kensington Gore, London, S.W.7.

BOARD OF CONTROL. Whole-time Deputy Medical SUPERINTENDENT (Consultant), at Rampton Hospital, near Retford, Notts (1143 Beds), for patients exhibiting conduct disorders with mental deficiency. Excellent opportunities for study, treatment and training of behaviour disorders of all kinds and degrees. Applicants must be registered medical practitioners, with experience in psychiatry and the D.P.M.; post is clinical, but experience in hospital administration an advantage; duties may involve attendance at outpatient clinics. Appointment on National Health Service conditions of service and superannuation regulations. House on the estate available at appropriate rental.

Applications, stating name, date and place of birth, nationality, details of education, professional qualifications, war service, present and previous appointments, and names of 3 referees, to Medical Superintendent, Rampton Hospital, Retford, Notts, by 16th July, 1954. Envelopes to be marked A/DMS. Canvassing in any form leads to disqualification. Candidates may visit Hospital by appointment with Medical Superintendent.

DERBYSHIRE COUNTY COUNCIL. County Health DEPARTMENT. ASSISTANT MATERNITY AND CHILD WELFARE MEDICAL OFFICER AND SCHOOL MEDICAL OFFICER. Applications are invited from registered medical practitioners for this whole-time superannuable post. Salary £950 p.a. by annual increments of £50 to £1300 p.a., plus a car allowance.

Application forms are obtainable from Dr. J. B. S. MORGAN, County Medical Officer, St. Mary's-gate, Derby, to whom they should be returned by 14th July.

SOUTH AUSTRALIA. PUBLIC SERVICE OF SOUTH AUSTRALIA. HOSPITALS DEPARTMENT.

DIRECTOR OF ANÆSTHESIA (non-resident), Royal Adelaide Hospital.

Salary range £A2087–£A2207 p.a.

Duties: To be responsible to the Medical Superintendent for the development, organisation and administration of the anæsthetic services in the Hospital (including teaching of medical students in anæsthesia).

Qualifications: Applicants must possess a senior degree in anæsthesia.

SENIOR REGISTRAR in Anæsthesia, Royal Adelaide Hospital.

Salary range: £A1312–£A1417 p.a.

Board and lodging provided for single person or living-out allowance of £A127 p.a. payable.

Qualifications: Applicants must be registered medical practitioners.

Period of appointment: 12 months, with eligibility for reappointment.

Salaries quoted are actual and include cost-of-living adjustments to date. Appointees to these positions may be required to contribute to the Government Superannuation Fund.

Written applications for the above-mentioned positions will be received by the Agent-General for South Australia, South Australia House, Marble Arch, London, W.1, until and including 24th July, 1954. Applicants should state full name, address, date of birth, marital status, academic qualifications, practical experience, and give particulars of war service (if any). Copies only of testimonials should be submitted with the application.

SHEFFIELD EDUCATION COMMITTEE. Applications are invited from duly qualified medical practitioners (Men and Women) for appointment as SCHOOL MEDICAL OFFICER. Special consideration will be given to the applications of candidates who have had experience in the treatment of children. Possession of the D.P.H. or D.C.H. qualification will be an advantage. Salary scale to be in accordance with the Whitley Councils for the Health Services (Great Britain) Medical Council, Committee "C." Superannuable post. Subject to satisfactory medical examination.

Application forms and particulars of the appointment may be obtained from the Director of Education, Education Office, P.O. Box 67, Leopold-street, Sheffield, 1, and should be returned not later than 17th July, 1954.

STOKE-ON-TRENT. CITY OF STOKE-ON-TRENT EDUCATION COMMITTEE. Applications are invited from fully qualified and registered medical practitioners for the post of ASSISTANT SCHOOL MEDICAL OFFICER. Salary scale £950–£1300 p.a. by annual increments of £50. The duties will consist of routine medical inspections in schools and clinic work. Holidays as school holidays. The appointment is subject to the provisions of the National Health Service superannuation regulations and is terminable by 1 months notice on either side. The successful candidate will be required to pass a medical examination.

Form of application, which may be obtained from the undersigned, should be completed and returned as soon as possible.

H. DIBDEN, Chief Education Officer.

Town Hall, Hanley, Stoke-on-Trent.

IPSWICH. COUNTY BOROUGH OF IPSWICH. Appointment of DEPUTY MEDICAL OFFICER OF HEALTH, DEPUTY PRINCIPAL SCHOOL MEDICAL OFFICER AND DEPUTY PORT MEDICAL OFFICER. Salary scale £1233 6s. 8d.–£50–£1483 6s. 8d. Commencing salary may be determined having regard to the previous local authority service of the successful candidate. Applicants must be duly registered medical practitioners possessing the D.P.H., and preference will be given to those who have had previous experience in relation to the School Health and Mental Health Services.

Application forms and conditions of service will be forwarded on application to the Medical Officer of Health, Elm-street, Ipswich.

Town Hall, Ipswich. J. C. NELSON, Town Clerk.

WARRINGTON. COUNTY BOROUGH OF WARRINGTON. Applications are invited from duly registered medical practitioners (Male) for the post of ASSISTANT MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER. The duties will be mainly in connection with the School Health and Child Welfare Services, but the officer appointed will be expected to carry out such other duties as may be required. There is opportunity for experience in all aspects of the work of a Local Health Authority and in the treatment of infectious diseases. The salary scale is £950–£50–£1300 p.a. Car allowance is payable.

Further particulars and conditions of appointment may be obtained from the Medical Officer of Health, Health Department, Sankey-street, Warrington, to whom applications should be sent not later than 15th July, 1954. The names of 2 persons to whom reference can be made should be included.

HER MAJESTY'S COLONIAL SERVICE. Hong Kong. MEDICAL OFFICERS are required for general duties in the Medical Department of Hong Kong. Appointment can be made on a permanent basis with pension (non-contributory) on retirement (the normal age of retirement is 55) or on short-term contract with gratuity on satisfactory completion of engagement. Salary scale, which includes pensionable expatriation pay, ranges from $1530 per mensem to $2548.33 per mensem (£1147 10s.–£1911 5s. p.a.—1 dollar equals 1s. 3d.). In addition a temporary, variable, non-pensionable cost-of-living allowance is payable according to family circumstances. Pension is earned at the rate of 1/600th of the final pensionable emoluments for each completed month of service. Officers who prefer short contract terms earn a gratuity of £37 10s. for each completed 3 months service (but no pension). Quarters are provided when available at reasonable rental. Until quarters are available, hotel or hostel accommodation is provided. Maximum charge for quarters, hotel or hostel accommodation is one eighth of basic salary. Income-tax at local rates. Free passages in both directions are provided for Officer, wife, and up to 3 children under the age of 18. Annual local leave is permissible and generous home leave is granted after each tour of 4 years. Climate is favourable for Europeans—a cool, dry winter with well marked change of seasons. Educational facilities are available. Candidates should be under 40 years of age and possess a medical qualification registrable in the United Kingdom. They must also have had 1 years experience as a House Officer in a hospital, and in addition, have had 3 years professional experience.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. CDE.117/51/03).

HER MAJESTY'S COLONIAL SERVICE. Hong Kong. SPECIALIST (gynæcological and obstetric) required in the Medical Department of Hong Kong. Appointment will be on 2 years probation for permanent and pensionable employment. Salary, including pensionable expatriation pay, is $2663·33 per mensem (£1997 10s. p.a.—1 Hong Kong dollar equals 1s. 3d.). A temporary, non-pensionable, cost-of-living allowance depending upon the Officer's family circumstances is also payable. Free passages in both directions are provided for Officer, wife and up to 3 children. Quarters are provided when available at reasonable rental. Until quarters are available, hotel or hostel accommodation is provided. Maximum charge for quarters, hotel or hostel accommodation is one-eighth of basic salary. Income-tax at local rates. Local leave is permissible and generous home leave is granted after each tour of 4 years duration. Normal retiring age is 55 and pension is earned at the rate of 1/600th of the final pensionable emoluments for each completed month of service. Climate is favourable for Europeans. Educational facilities are available. Candidates must possess medical qualifications registrable in the United Kingdom and be members of 1 of the Royal Colleges of Obstetricians and Gynæcologists. They must also have been medically qualified for 7 years, of which 5 years must have been spent working in gynæcology and obstetrics as a specialty.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD.117/51/019).

HER MAJESTY'S COLONIAL SERVICE. Trinidad. 2 MEDICAL OFFICERS are required for duty in the Health Department (1 in a Mental Hospital and 1 for institutional work) in Trinidad. Appointment can be made on a permanent basis with pension (non-contributory) at the age of 60, or on short-term agreements. Candidates in the National Health Service may resign from the National Health Service but retain their superannuation rights during their time in the Colonial Service (up to 6 years) and receive resettlement grants of 20% of the aggregate of their Colonial salaries on leaving the Colonial Service at the end of their engagements. Salary scale ranges from B.W.I. $5280 to B.W.I. $5760 (£1100–£1200) p.a. A temporary variable cost-of-living allowance is at present payable at the rate of $108 (£22 10s.) p.a. (1 B.W.I. $ equals 4s. 2d.). Starting salary is determined in accordance with the candidate's age, qualifications, and experience. A revision of salaries is being undertaken in Trinidad and the officers selected will benefit from any increase. Pension is earned at the rate of 1/600th of the final pensionable emoluments for each completed month of service. Quarters are not provided but an allowance in lieu is paid to an officer recruited from outside the Colony. Free passages on first appointment are provided for Officer and family not exceeding 5 persons in all, also free passages on leave subject to a maximum of 3 adult fares. Income-tax at local rates. Local leave is permissible and generous home leave is granted after each tour. Tour of service is 3 years. Educational facilities are available. Candidates for employment at the Mental Hospital should possess the Diploma in Psychological Medicine and have had at least 3 years postgraduate experience in the practice of psychological medicine, 2 of which should have been spent in working in a Mental Hospital. Candidates for institutional work should preferably possess a Diploma in Tropical Medicine and Hygiene, but must have good experience. All candidates must possess qualifications registrable in the United Kingdom. Preference will be given to candidates having higher qualifications (M.R.C.P., &c.).

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD.117/38/05).

GOLD COAST LOCAL CIVIL SERVICE. Entomologists required in the Department of Tsetse Control in Gold Coast. Duties will be to investigate various aspects of the bionomics and ecology of tsetse flies in relation to man and animals, and to supervise control measures under the direction of the Director of Tsetse Control. The selected officers may be required on occasions to live under field conditions in remote places. Candidates should have an honours degree in zoology and have had training in entomology. Appointments are to the Gold Coast Civil Service on short-term contracts of 2 tours of 18–24 months in the first instance with gratuity on satisfactory completion of service. Consolidated salary is on the scale £990–£1950 a year —starting salary determined according to qualifications and experience. Gratuity would be at the rate of £25 (whilst salary is less than £1000 a year) and £37 10s. (whilst salary is over £1000 a year) for each completed 3 months of resident service. Quarters are provided at rental of £60–£150 a year according to salary. Income-tax at local rates. Free passages provided for Officer, wife, and up to 3 children under 13 years of age. Annual local leave is permissible and generous home leave is granted after each tour.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD.77/13/01).

TREASURY MEDICAL SERVICE. Applications are invited from medical practitioners, practising in the districts detailed below, for appointment, in a part-time and mainly advisory capacity, as LOCAL TREASURY MEDICAL OFFICER for each of the places or groups of places shown. The town shown in brackets after the place-names indicates the Head Post Office Area in which the place, or group of places, is situated. Successful applicants will be required to examine and report on the condition of certain Government Officers, teachers, candidates for appointment, &c., who may be referred to them from time to time; and to attend when summoned to an emergency case of accident or sudden illness occurring in a Government office in the neighbourhood. Fees for this work, and mileage allowance where necessary, will be paid on a scale agreed with the British Medical Association.

Intending applicants should write, within 14 days, to Treasury Medical Adviser, Treasury Chambers, Whitehall, S.W.1, for a form on which application may be made. Applicants should be not more than 60 years of age.

The places for which applications are invited are as follows :—

ENGLAND AND WALES

Sturminster Newton (Blandford).
Hawes (Northallerton).
Oakham (Oakham).
Berkeley (Gloucester).

SCOTLAND

Peterculter (Aberdeen).
Strachur (Dunoon).
Uddingston (Glasgow).

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."

AMENDED NOTICE

GODALMING, SURREY. Applications invited for death VACANCY at Farncombe in above urban area. List about 2200. No residence but surgery likely to be available temporarily. "Intermediate" area. Applications, on Form E.C.16A, to reach the undersigned on or before 16th July, 1954.

S. H. BENNETT, Clerk, Surrey Executive Council.
187, Ewell-road, Surbiton, Surrey.

AMENDED NOTICE

BARNES, SURREY. Applications invited for retirement VACANCY in above urban area. List about 700. Practice of lady doctor for many years and list contains large proportion of female patients. Residence and surgery may be available for purchase. "Intermediate" area. Applications, on Form E.C.16A, to reach the undersigned on or before 16th July, 1954.

S. H. BENNETT, Clerk, Surrey Executive Council.
187, Ewell-road, Surbiton, Surrey.

BIRMINGHAM, GRAVELLY HILL. Applications invited for VACANCY (urban) due to resignation. List approximately 1725. Residence and surgery available. Apply on E.C.16A not later than 17th July, 1954, to—

K. F. G. DAY, Clerk of Birmingham Executive Council.
Sutton New-road, Erdington, Birmingham, 23.

Doctor's Practice for Sale as a Going Concern. Busy Medical Practice in Irish Provincial city for sale as a going concern. Present owner taking up full-time appointment in another city. House and surgery available. Purchaser can work for a few weeks with present owner and also have an opportunity of securing some remunerative appointments held. Figures available for the past 5 years. Price reasonable.—For further details apply to: T. R. CHAMBERS, HALLEY & Co., Accountants and Auditors, 14, Barronstrand-street, Waterford.

Miscellaneous

To non-professional posts the notification of Vacancies Order 1952 applies.

Family Doctor. Medical Assistant Editor. Applications are invited from registered medical practitioners for the appointment of a Medical Assistant Editor for *Family Doctor*, the popular health magazine published by the British Medical Association. In the first instance the appointment will be for a probationary 12 months, with 1 months notice on either side during that period, pending confirmation of the appointment. The salary will be at least £1500 a year according to age and experience. Candidates must present evidence of literary ability and journalistic experience. It is essential that they should have written, published and been paid for, popular articles on medical subjects. Experience of popular medical journalism is essential. Experience of medical editing, perhaps of student magazines, is desirable.

Applicants should send full particulars of qualifications, age, experience, &c., together with the names and addresses of 3 persons to whom reference may be made. Applications should be addressed to the Editor, *Family Doctor*, B.M.A. House, Tavistock-square, London, W.C.1. Applications will not be considered after 31st July, 1954, and envelopes should be marked "Medical Assistant Editor."

The Wellcome Foundation Limited invites applications for the full-time post of Medical Officer for its Beckenham and Dartford Units. The duties will embrace the normal functions of an Industrial Medical Officer. Candidates should have good clinical experience and possess a Diploma in Industrial Health or an equivalent qualification.—Application forms should be obtained from the Secretary, The Wellcome Foundation Limited, 183/193, Euston-road, London, N.W.1.

Editorial Staff of The Lancet. Applications are invited for the post of Junior Assistant Editor. This additional full-time appointment to the staff of the journal is intended particularly for a man aged 26–29 with postgraduate medical experience, ability to write, and good health. The initial salary will be approximately what the person appointed would earn at hospital.—Possible applicants are asked to write informally but informatively to the Editor, 7, Adam-street, Adelphi, London, W.C.2.

Required. Translator for Thesis; English into French. Typewritten if possible.—Address, No. 946, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Medical Secretary (age 18–25) required. Salary grade B.— Detailed applications to Secretary, Hammersmith Hospital and Postgraduate Medical School, Ducane-road, London, W.12, or telephone SHE 2235, Ext. 116, for appointment.

Consulting-rooms, full and part time, and Houses in the medical area.—ELGOOD & Co., 1, Bentinck-street, W.1 (WELbeck 8974).

Mandeville-place, W.1. Several entire floors, each approximately 2200 square feet, available in first-class Professional building shortly to be erected. Lift and central heating. —For preliminary details apply: Managing Agents, CHRISTIE & Co. (Ref. 17), 7, Baker-street, W.1.

Harley-street. Spacious second-floor consulting-room with examination-room adjoining to be let on new lease. Rent £350 p.a. inclusive of rates, hot water, and cleaning; also use of lift, waiting-room, and an attendant to receive callers. Full particulars from Owners' Agents.—JONES, LANG, WOOTTON & SONS, 53/54, South Audley-street, W.1 (Tel.: MAYfair 4651).

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimen of urine and £1 1s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE, LTD., 98, Victoria-street, S.W.1 (Phone: VICtoria 0141), who are specialists in this kind of work.

For sale: Coll. Papers Mayo Clinic Vols. XI–XLI (1919–49), also Vols. XII–XV (1920–23), Vols. XVII–XXIX (1925–37); St. Bart's Hosp. Rep. 1930–35; Brit. M.J. 1932–4 (bound); Journal A.M.A. 2, 1940 (Vol. 115) (bound). What offers?—JOHNSON, 57, East-parade, Harrogate.

PUBLISHED by the PROPRIETORS, THE LANCET LIMITED, 7, Adam Street, Adelphi, in the County of London.
50 Printed by HAZELL, WATSON & VINEY, LTD., London and Aylesbury—Saturday, July 3, 1954.
PRINTED IN GREAT BRITAIN—Entered as Second Class at the New York, U.S.A., Office.

THE DISTILLERS COMPANY
(Biochemicals) Limited

WHEN, as with penicillin, the efficacy of a drug is universally accepted, its presentation and ease of administration then assume importance.

'Distaquaine' preparations are pre-eminently suitable for almost all those instances in which penicillin therapy is indicated.

'DISTAQUAINE' G brand

Procaine penicillin G for administration in aqueous suspension
vials of 300,000, 900,000 and 3,000,000 units.

'DISTAQUAINE' brand **FORTIFIED**

Procaine plus potassium penicillin G for administration in aqueous suspension
vials of 400,000, 1,200,000 and 4,000,000 units.

'DISTAQUAINE' brand **SUSPENSION**

'Distaquaine' G in ready-prepared aqueous suspension
vials of 10 ml. (300,000 units per ml.)

Advantages

* aqueous, containing neither oil nor wax
* easy to prepare and administer
* least possible pain on injection
* effective levels up to 24 hours following administration
* dry syringe unnecessary
* equipment easily cleaned after use

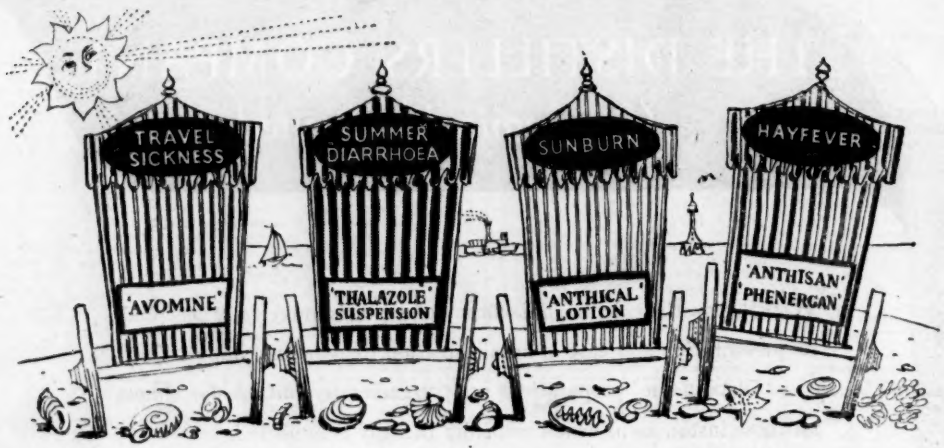
Distributed by:

ALLEN & HANBURYS LTD.
BRITISH DRUG HOUSES LTD.
BURROUGHS WELLCOME & CO.
EVANS MEDICAL SUPPLIES LTD.
IMPERIAL CHEMICAL (PHARMACEUTICALS) LTD.
PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LTD.

Manufactured by THE DISTILLERS COMPANY (BIOCHEMICALS) LIMITED, LIVERPOOL, ENGLAND

owners of the trademark 'Distaquaine'

6/54F



Summer Ailments

In the train of summer comes a host of minor but often annoying conditions such as hayfever and summer diarrhoea. Fortunately, most of these holiday season complaints are not serious. " I get so sick on a boat . . . he's been eating exactly the same as us, doctor . . . it was a wasp, I think". Familiar? Not the exact phrases perhaps but the type of complaint that most doctors will have heard.

You will find that in many cases there is an **M&B** brand Medical Product ideally suitable for the treatment of what we term " summer ailments ".

Detailed literature is available on request

*'**AVOMINE**' *brand*
PROMETHAZINE 8-CHLOROTHEOPHYLLINATE
—prevention and treatment of travel sickness
25 mgm. tablets.

*'**THALAZOLE' SUSPENSION**
brand
PHTHALYLSULPHATHIAZOLE
—in "summer diarrhoea" when due to dysentery bacilli.
Each 3·6 c.c. (approx. 1 teaspoonful) contains 0·75 gramme phthalylsulphathiazole.

*'**ANTHICAL' LOTION**
brand
—in sunburn, insect bites and pruritic skin disorders.
Bottles of 4 fl. oz. mepyramine maleate—zinc oxide lotion.

*'**ANTHISAN**' *brand*
MEPYRAMINE MALEATE
—the general-purpose antihistaminic for hayfever and allied allergic disorders.
50 and 100 mgm. tablets, elixir, solution, and cream presentations.

*'**PHENERGAN**' *brand*
PROMETHAZINE HYDROCHLORIDE
—the antihistaminic with a prolonged action.
10 and 25 mgm. tablets, elixir, solution, and cream presentations.

* *trade mark*

M&B BRAND MEDICAL PRODUCTS
MANUFACTURED BY
MAY & BAKER LTD

MA1981A

DISTRIBUTORS: PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LTD · DAGENHAM · ESSEX
Tel. ILFord 3060 Ext. 99 or 100